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UNITED STATES NAVAL ACADEMY

ANNAPOLIS, MARYLAND

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1960–1961 CATALOGUE OF INFORMATION

Mission of the United States Naval Academy

To develop midshipmen morally, mentally and physically and to imbue them with the highest ideals of duty, honor and loyalty in order to provide graduates who are dedicated to a career of Naval Service and have potential for future development in mind and character to assume the highest responsibilities of command, citizenship and government.

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UNITED STATES NAVAL ACADEMY

ANNAPOLIS
MARYLAND

Catalogue of Information
1960–1961

The Brigade Color Guard

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Bancroft Hall.

This is the Naval Academy

The United States Naval Academy is the undergraduate college of the United States Navy. It was established in 1845 for the sole purpose of providing properly educated and trained officers for the naval service. Graduates of the fully accredited 4-year course are awarded the bachelor of science degree and are commissioned ensign, U.S. Navy, or second lieutenant, U.S. Marine Corps.

The Naval Academy is located in Annapolis, a city of some 25,000 population and the capital of Maryland. It is 30 miles east of Washington, D.C., and 25 miles south of Baltimore.

THE YARD

The Naval Academy Yard on the banks of the Severn River comprises 365 acres occupied by 219 major buildings and extensive drill and playing fields. The beautiful setting, where the Severn widens into Chesapeake Bay, is admirably suited for training the midshipmen afloat and for inspiring them with the seaman's love of salt water.

Of all the buildings in the Yard, one stands out as the center of midshipman activity. That is Bancroft Hall, the largest college dormitory in the world, which houses the entire Brigade of Midshipmen. Its facilities provide for most of their daily needs: tailor and barbershops, post office, medical and dental quarters, soda fountain, bookstore, recreation rooms, a tremendous galley, and the vast Mess Hall where the entire brigade is served at a single sitting.

The academic buildings, named in honor of naval heroes, have well-equipped classrooms and modern scientific laboratories. Throughout the Yard stand monuments honoring the great naval leaders of the past. In the crypt beneath the dome of the Chapel rests the sarcophagus of the Revolutionary War hero, John Paul Jones.

The Superintendent

REAR ADMIRAL JOHN F. DAVIDSON, *U.S. Navy*

A graduate of the Naval Academy, Class of 1929, Admiral Davidson had served on board various battleships and submarines prior to World War II. He was awarded the Legion of Merit with Combat "V" and the Silver Star for heroic service as Commanding Officer of the submarine, USS *Blackfish*. He has served on the staff of Commander, Submarine Training Command, Pacific, and commanded Submarine Division 62, the submarine tender, USS *Orion*, and Submarine Squadron TWO. After serving as Head of the Department of English, History and Government at the Naval Academy, he commanded USS *Albany*. In January 1957, he became the Director of the Politico-Military Policy Division in the Office of the Chief of Naval Operations, and in December 1957, he assumed command of Cruiser Division FIVE. Most recently he has served as Chief, Navy Group, Joint U.S. Military Mission for Aid to Turkey.

The Commandant of Midshipmen

CAPT. JAMES H. MINI, *U.S. Navy*

Graduated from the Naval Academy in the Class of 1935, Captain Mini served for the next 2 years in USS *New Mexico*. Designated a naval aviator in 1938, he saw duty on board the aircraft carriers *Saratoga* and *Ranger* and was senior aviator of the battleship *Arizona* when it was sunk at Pearl Harbor. He was Commander of Bombing Squadron 15 which scored 40 direct hits on enemy warships during the Battle of Leyte Gulf on October 24–25, 1944. He has served as Naval Aide to the Assistant Secretary of the Navy, attended the National War College, was Commanding Officer of USS *Kenneth Whiting*, and served on the Staff of Commander, Naval Air Forces, Pacific Fleet. Prior to reporting as Commandant in 1960, he commanded the aircraft carrier, USS *Midway*.

THE BRIGADE OF MIDSHIPMEN

The Brigade of Midshipmen numbers about 3,600. It is divided into two regiments, each regiment into three battalions, and each battalion into four companies. The 24 companies are the basic administrative units. Each of the subdivisions of the brigade has its own appropriate midshipman officers, headed by the Brigade Commander. Midshipmen stand watch, as aboard ship, and exercise leadership in both the military and administrative activities of the Brigade as a vital part of their training.

The entering class is designated the Fourth Class, and its members are colloquially known as "plebes." Upon completion of their initial year they become Third Classmen, or "youngsters." The next year they become Second Classmen, and in their last year at the Naval Academy they are First Classmen. Each company is made up of members of all four classes in proportion to the size of the class. Each Fourth Classman is assigned to a First Classman for guidance.

The Fourth Classman also has a sponsor, a member of the faculty who has volunteered to assist the new student unofficially in making his adjustments to life at the Naval Academy. A sponsor is usually assigned two or three Fourth Classmen who live in the same dormitory room. On weekends, periodically, he entertains in the congenial surroundings of his home, away from the austerity of the Yard. The Fourth Classmen are encouraged to consult with their sponsors on personal problems. Warm, enduring friendships have grown out of the sponsorship program.

THE MIDSHIPMAN'S ROUTINE

The life of a midshipman is an active one. He follows a well-planned routine from the time he rises in the morning until he goes to bed at night. It is the strict discipline of this routine which distinguishes the Naval Academy from most other colleges.

A midshipman's day begins at 6:15 a.m. He rises and prepares himself for breakfast formation, 30 minutes later. After breakfast he begins a day of study, recitations, drills, and laboratory work. When the academic work is completed at 3 or 4 p.m., he will usually participate in sports or extracurricular activities until evening meal formation at 6:30 p.m. After the evening meal and a brief period of relaxation, he returns to his studies until 10:15 p.m. Five minutes later, the midshipman has "turned in" for the night.

At noon on Saturday, the Brigade completes the academic work for the week. Saturday afternoon will find the midshipmen enjoying "liberty" in Annapolis or attending the many intercollegiate athletic contests or participating in them. On Saturday night a dance, or "hop," is usually planned by one of the three upper classes. Motion pictures are shown for all midshipmen on Saturday night, and on

Sunday afternoon the three upper classes may escort guests to these movies.

On Sunday morning the midshipmen attend services at the Naval Academy Chapel or at the church of their choosing in the city of Annapolis.

After the First Class has graduated in June, midshipmen of the three other classes embark on cruise. The summer program gives the midshipman an opportunity to apply the knowledge and techniques he has acquired at the Naval Academy to duties in engineering, gunnery, navigation, communications, aviation, and tactics. He learns at first hand the duties of seamen and petty officers as well as those of junior officers. He gains increased knowledge and a wider understanding of the Navy. In visits to foreign ports he enjoys seeing the land and meeting the people of America's friends and allies. At the end of cruise, the midshipman receives 30 days leave before beginning the new academic year.

Meanwhile the members of the new Fourth Class have spent the summer at the Naval Academy. Their program of indoctrination has prepared them for taking their place in the Brigade when the entire body of midshipmen returns to Annapolis in September.

Herndon Monument—
No More Plebes.

Dance.

LEAVE AND PRIVILEGES

The amount of personal freedom and privilege varies directly with the seniority of the midshipman and the degree of his authority and responsibility. A First Classman (Senior) not only will have more responsibility in the administration of the Brigade but also will have more privileges.

During his first year, the plebe is busy becoming familiar with navy life and learning its customs and traditions. He is expected to participate in intramural sports and become active in as many extracurricular activities as his studies will allow.

There are several regular leave periods for all classes during the academic year. These are Christmas leave, a period of about 2 weeks; end-of-term leave, a 3-day weekend break at the end of the first term in January; spring leave, a period of 3 days usually in late March; and the month-long summer leave of 30 days at the completion of the summer training program.

The regulations governing liberty, a term applied to recreational freedom to differentiate it from leave, which is an authorized leave of absence away from the Naval Academy, are set forth in detail in the Academy Regulations. In general, the liberty privileges for each class are as follows:

First Class: Have privilege of liberty in the Yard and in Annapolis every day, unless duties interfere. They are also privileged to have three weekend liberties each term.

Mahan Hall.

Second Class. Have privilege of liberty in Annapolis on Wednesdays, Saturdays, and Sundays, and Yard liberty during the rest of the week at prescribed times. Second Classmen may select one weekend liberty each term.

Third Class. Have privilege of town liberty Saturdays and Sundays, and Yard liberty on Wednesdays at prescribed times.

Fourth Class. Have privilege of town and Yard liberty on Saturday afternoons, with dining-out privileges on Saturday and/or Sunday with relatives, sponsors, or close friends. Fourth Classmen are not permitted to escort young ladies or attend dances their first year.

ACADEMIC ORGANIZATION

The Superintendent, a naval flag officer with wide Fleet experience, directs the work of the Naval Academy under the immediate administrative control of the Chief of Naval Personnel. He is assisted by the Commandant of Midshipmen, who is charged with the direct administration of the Brigade of Midshipmen; by the Academic Aide, who supervises the induction, examination, academic instruction, and graduation of midshipmen; and by the Directors of the three major academic divisions, Naval Science, Science and Engineering, and Social Sciences and Humanities. The Superintendent, the Commandant, and the three Directors constitute the Academic Board of the Naval Academy.

The midshipman's military life and his program of physical education and intramural athletics are carried on under the Commandant of Midshipmen by the Executive Department and the Physical Education Department.

SCHEDULE OF INSTRUCTION

The calendar year for each Naval Academy class is divided into three terms: summer term, first term, and second term. The academic year consists of the first and second terms, each term generally consisting of 17 weeks of instruction and 1 week of examinations. The normal academic routine provides for 5½ days of recitations, lectures, laboratory periods, and drills each week. The academic day is divided into six 50-minute periods, Monday through Friday, and four periods on Saturday. During the seventh period, the Brigade participates in military drill on Monday and a dress parade on Wednesday, during the fall and spring. Certain elective courses are taught the seventh period on Tuesdays, Thursdays, and Fridays. A 2½-hour evening study period is provided every evening except Saturday.

The instructional unit is the *section* of about 15 midshipmen. These small sections give each midshipman an opportunity to take an active part in classroom discussion. The high ratio of instructors to students makes it possible usually to assign a maximum of three or four sections to an instructor. As a consequence, considerable individual attention is characteristic of education at the Naval Academy.

FACULTY

The Naval Academy faculty is composed of naval officer instructors and experienced civilian college professors in approximately equal proportion. Through exchange programs, there are also representatives of the other armed forces and of other colleges and universities on the faculty. A policy of assigning the best qualified instructor for the specific course determines the distribution of the officer and civilian faculty among the academic departments. For example, the Executive and Naval Science departments are staffed by officers, whereas the Social Sciences and Humanities departments have a preponderantly civilian faculty.

Members of the Naval Academy faculty participate in local and national meetings of educational and professional societies. As advisers and coaches, they work closely with the midshipmen in their extracurricular activities. As scholars, they contribute to the literature of their specialities, prepare texts for midshipman instruction, and enjoy sabbatical leave for conducting major research projects in this country and abroad.

Meeting of Senior Professors.

Graduation—Midshipmen tossing caps.

THE ACADEMIC PROGRAM

The 4-year program of the Naval Academy is undergraduate in scope and leads to the bachelor of science degree. The basic curriculum consists of 156 semester hours during the 4 academic years, exclusive of summer terms. About one-half of the instruction time is devoted to physical and engineering sciences, one-quarter to the social sciences and humanities, and one-quarter to naval science. The curriculum stresses basic and enduring principles to provide a background for effective leadership.

As a supplement to the basic curriculum, the Naval Academy offers a program of elective courses and provision for validation of college-level work successfully completed prior to admission. Qualified midshipmen may undertake advanced undergraduate courses in several major fields of concentration. The overall program assures all midshipmen of the educational benefits of the basic curriculum and at the same time provides the opportunity for fuller development of individual talents.

The awarding of the bachelor of science degree to graduates of the Naval Academy is authorized by the act of Congress approved 25 May 1933, as amended by the act of Congress approved 8 July 1937. The degree is accredited by the Middle States Association of Colleges and Secondary Schools.

Tecumseh—
God of the 2.5.

THE ELECTIVES PROGRAM

Eligible midshipmen of the three upper classes are authorized to enroll in elective courses in addition to the courses in the basic curriculum, each midshipman being permitted to enroll in one such elective a term. To assist in the planning of a profitable program, a faculty adviser from the appropriate academic department is assigned each midshipman carrying an elective.

MAJOR AREAS OF STUDY

Midshipmen completing appropriate elective studies in an area of concentration may gain sufficient credits in addition to those in the basic curriculum to meet collegiate requirements for a major in that area. The number of semester hours of additional courses required for this purpose vary from 15 to 18 semester hours. Major programs may be undertaken in mathematics, marine engineering, electrical engineering, aeronautical engineering, engineering physics, social science, foreign language, and English.

Bill the goat.

THE VALIDATION PROGRAM

Midshipmen of the Fourth Class are allowed to validate courses completed prior to entrance which are substantially the same as those in the basic curriculum. Validation is granted on the basis of examination administered by the department concerned and review of previous scholastic high school and college records. *Candidates are encouraged to submit College Entrance Examination Board Advanced Placement test results.*

Midshipmen normally are enrolled in the next sequential course in the department in which they validate. They are expected to fill the vacancy with an elective course during a later year. Each validating midshipman is assigned a faculty adviser to assure that he has the prerequisite courses to undertake the substitute Third Class Year courses and to assist in planning a profitable pattern of elective courses in the future.

Midshipmen marching.

The Basic Curriculum

FOURTH CLASS YEAR

First Term	*Semester Hours*
M11. Analytic Geometry and Calculus	5
S11. Chemistry	4
E11. Engineering Drawing	2½
H11. Composition and Literature	3
L11. Foreign Language	3
C11. Seamanship Drills	½
T11. Physical Education	1
X11. Executive Drills	½
	19½

Second Term	*Semester Hours*
M12. Calculus	5
S12. Chemistry	4
E12. Descriptive Geometry and Statics	2½
H12. Composition and Literature	3
L12. Foreign Language	3
C12. Seamanship Drills	¼
T12. Physical Education	1
X12. Executive Drills	½
	19¼

THIRD CLASS YEAR

M21. Calculus, Probability and Statistics	5
S21. Physics	5
E21. Strength of Materials	3
H21. Modern European History	3
L21. Foreign Language	2½
T21. Physical Education	¾
X21. Executive Drills	½
	19¾

M22. Mechanics	5
S22. Physics	5
E22. Engineering Materials	3
H22. U.S. Foreign Policy	3
L22. Foreign Language	2½
C22. Seamanship Drills	¼
T22. Physical Education	¼
X22. Executive Drills	½
	19½

EXPLANATION OF COURSE NUMBERS

Course numbers are assigned to each basic and elective course in accordance with the following system:

(a) The letter prefix identifies the department conducting the course.

(b) The first number serves to identify the course as follows: 1 through 4 designate a course in the basic curriculum, and 5 through 8 designate elective courses, 1 and 5 being

of the U.S. Naval Academy

SECOND CLASS YEAR

First Term	*Semester hours*
M31. Differential Equations[1]	3½
S31. Electrical Science	3½
E31. Thermodynamics	4
H31. U.S. Government	2
C31. Piloting and Meteorology	3½
W31. Weapons Components	2
T31. Physical Education	½
X31. Executive Drills	½
	19½

Second Term	*Semester hours*
S32. Electrical Science	4¼
E32. Fluid Mechanics	4
C32. Leadership	1¼
C34. Navigation	4
W32. Weapons Components	2¼
H32. Economics and Speech	2¾
T32. Physical Education	½
X32. Executive Drills	½
	19½

FIRST CLASS YEAR

S41. Electrical Science	3
E41. Applied Fluid Mechanics	3
C41. Leadership	2¼
C43. Naval Operations	3¾
W41. Weapons Systems	2½
H41. Naval History	3½
Y41. Naval Hygiene	¾
T41. Physical Education	¼
X41. Executive Drills	½
	19½

S42. Electrical Science	3
E42. Applied Thermodynamics	3
C42. Leadership	1½
C44. Naval Operations	4½
W42. Trajectory Mechanics	2¾
H42. Advanced Composition and Literature	3¾
T42. Physical Education	½
X42. Executive Drills	½
	19½

fourth class level courses, 2 and 6 third class, 3 and 7 second class, and 4 and 8 first class. A 9 designates a course of a special nature.

(c) The second number: an odd number identifies a course normally taught the first semester, and an even number the second semester.

(d) A letter suffix is a foreign language designator.

[1] Includes ½ semester hour of spherical trigonometry.

Subcritical nuclear reactors.

Science and Engineering

Director: Capt. Walter L. Small Jr., U.S. Navy

The academic subjects in science and engineering constitute approximately half of the total curriculum, and are similar in content and treatment to comparable courses at representative engineering colleges and universities. They are designed to implant the basic academic disciplines which will awaken the midshipman's intellectual interest and appreciation for analytical methods, develop his habits of independent and logical thought, and give him the fundamental scientific competence required in his professional naval studies.

ENGINEERING DEPARTMENT

Head of Department: Captain John M. Reigart, U.S. Navy
Executive Officer: Commander Jack B. Jones, U.S. Navy
Senior Professor: Robert M. Johnston

The courses in the Engineering Department offer an engineering background based on fundamental theories and their naval applica-

tions. The emphasis is on basic principles that may be applied to the complex and ever-increasing technical problems associated with the naval establishment.

Description of Courses

FOURTH CLASS YEAR

Summer Term

E10. *Practical Marine Engineering and Shop Practices.* Introduction to marine and mechanical engineering, through sectioned machinery of typical modern naval installations, and scale models of naval machinery and machinery spaces of modern naval vessels. Demonstrations in patternmaking, foundry practice, machine shop practice, blacksmithing, coppersmithing, and gas and electric welding. Familiarization with various types of naval machinery.

First Term

E11. *Engineering Drawing.* Instruction in the use of drawing instruments and mechanical drafting procedures. Applications of orthographic, oblique, and isometric projection to engineering drawings. Freehand sketching from models and working drawings from sketches. Producing simple detailed working drawings from dimensioned assemblies, and making assemblies from completed working drawings. Exercises in blueprint reading. *Two and one-half semester hours.*

Second Term

E12. *Descriptive Geometry, Statistics.* Descriptive geometry, including solution of space problems involving points, lines and planes, parallelism, perpendicularity or angularity of lines and planes and relationships of these to curved surfaces. Treatment of coplanar force systems, moments, couples; equilibrium, free-body diagrams, structures; centroids, moments of inertia of areas, transfer of axes. *Two and one-half semester.*

THIRD CLASS YEAR

Summer Cruise

During his first cruise, the Third Classman is introduced to the organization of a combatant vessel's Engineering Department and is informed of the kind, purpose, and function of naval main propulsion and auxiliary units.

First Term

E21. *Strength of Materials.* An introduction to the mechanics of engineering materials with emphasis on both their elastic and inelastic behaviors. Classroom work is concerned with axial stresses and strains, torsion, combined stresses, Mohr's circle, thermal stresses, shear and bending-moment diagrams, the flexure formula, the equation of the elastic curve, the beam deflections. *Three semester hours.*

Second Term

E22. *Engineering Materials.* A general study of engineering materials—ferrous and nonferrous metals, inorganic nonmetallic materials and organic materials. *Three semester hours.*

SECOND CLASS YEAR

First Term

E31. *Basic Thermodynamics.* A first course in thermodynamics emphasizing the classical approaches to and developments from the First and Second Laws, including Clausius inequality, and the Nernst development of the Third Law. The course further includes consequences of the Second Law, available and unavailable energy of thermodynamic systems, properties of gases and vapors, analysis of processes and cycles involving gases and vapors and combustion processes and products, and transfer. *Four semester hours.*

Second Term

E32. *Basic Fluid Mechanics.* The course covers fluid properties; fluid statics; basic flow concepts; basic equations including conservation of mass, momentum, and energy and the equation of state; dynamic similitude including Reynolds, Mach, and Froude's numbers; viscous effects including the boundary layer, turbulent flow, head loss, drag; frictionless compressible flow; two dimensional ideal fluid flow. *Four semester hours.*

FIRST CLASS YEAR

Summer Cruise

During his second cruise, the First Class midshipman becomes familiar with the organization, facilities, and functions of the Engineering Department of a typical combatant vessel. He learns the duties of a junior officer by standing watches throughout the Engineering Department and by exercising the responsibilities of Engineering Division Officer through the administration and instruction of midshipmen.

First Term

E41. *Applied Fluid Mechanics.* The objective of the course is to demonstrate the application of the basic laws of fluid mechanics and problem

solving techniques through selected applications. The course covers measuring of fluid flow; momentum analysis of pumps and turbines; closed conduit flow; subsonic aerodynamics; and hydromechanics. *Three semester hours.*

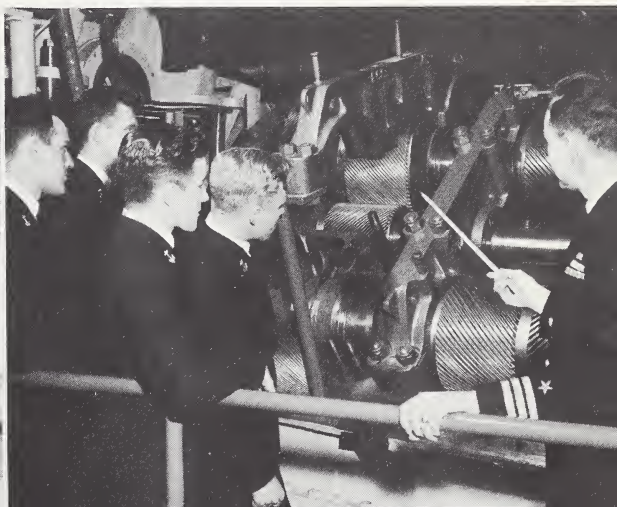
Second Term

E42. *Applied Thermodynamics.* Application of principles of thermodynamics to internal combustion engines, gas and steam turbines, compressors and expanders, nozzles and diffusers, and turbo machinery. The course stresses the practical aspects of thermal energy conversion. *Three semester hours.*

ELECTIVE COURSES

E61. *Kinematics.* A study of displacements, velocities and accelerations of machine elements. Topics include Centros and Kennedy's Theorem; accelerations, Coriolis' Law and Klein's Construction with typical applications such as steering mechanisms, Oldham's Coupling and Hooke's Joint; development of plate and cylindrical cam profiles, follower types and displacements; rolling contact through friction gearing of ellipses and hyperboles; cycloidal and involute gear teeth and modifications; gear trains, rack and pinion, worm and wheel, and special devices such as the differential screw, the swash plate and the Geneva wheel. Prerequisites: E12, M12. Corequisite: S21. *Three semester hours.*

E62. *Naval Architecture.* Hull form types; ship geometry; nomenclature and hydromechanic parameters; form coefficients; hull form delineation; fairing and lofting practices. Form calculations; methods of determining areas, volumes, moments. Computations for displacement, center of buoyancy, center of gravity and wetted surface. Preparation of hydrostatic curves. Floodable length curves, de-



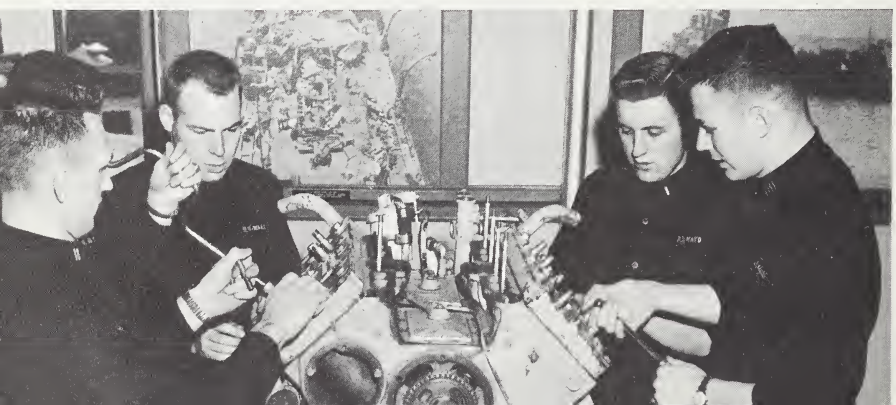
termination of watertight subdivision. Prerequisites: E12, S21. *Three semester hours.*

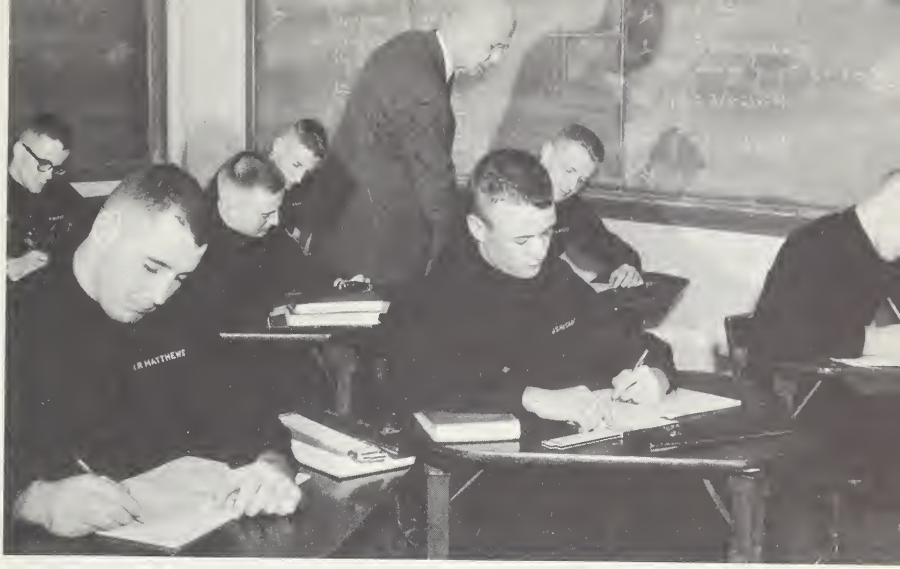
E71, 72. *Intermediate Strength of Materials.* Continuation of E22. Topical coverage includes two-material axially loaded members, welded and riveted joints, shear flow, shear center, unsymmetrical bending, statically indeterminate beams, deflection of beams, column formulae and stress and strain at a point. Topics will be treated from both an elastic and an inelastic viewpoint. First or Second Term. Prerequisite: E22. *Three semester hours.*

E73. *Nuclear Engineering I.* Basic facets of atomic and nuclear physics necessary for an understanding of elementary pile theory and reactor physics. Topical coverage includes natural and artificial radioactivity and alpha, beta and gamma emission; elements of neutron physics, nuclear fission, slowing down and diffusion of neutrons; calculations of bare critical size and multiplication factor. Demonstrations using the nucleonics laboratory and subcritical reactor will be scheduled at various times to emphasize recitation material. Prerequisite: S22. *Three semester hours.*

E74. *Nuclear Engineering II.* Continuation and development of E73. Subject material includes radiation protection, radioactive sources, radiac equipment, shielding, reactor systems, technology of reactor materials and effects of radiation upon materials. Laboratory exercises employing the subcritical reactor are scheduled to supplement and emphasize the classroom work. Prerequisite: E73. *Three semester hours.*

E75. *Systems Engineering.* Relationship between the physical system and the differential equation which expresses its behavior. Topical coverage includes first and second order systems, transfer functions for both open and closed loop systems, and frequency response methods. Emphasis is upon mechanical devices, hydraulic and electrical systems are included to stress analogous nature of all dynamic systems. Prerequisite: M31. *Three semester hours.*





Students at desks.

MATHEMATICS DEPARTMENT

Head of Department: Captain Joseph E. Hokr, U.S. Navy
Executive Officer: Commander Richard Watson, U.S. Navy
Senior Professor: Livingston H. Chambers

This department develops in the midshipmen the fundamental skills of trigonometry, analytical geometry, calculus, mechanics, differential equations, and selected modern topics, with their application to analysis of mechanical, electrical, and fluid phenomena which are basic to the solution of naval technical problems. Advanced courses in calculus and mechanics are established for superior students.

Description of Courses

FOURTH CLASS YEAR

First Term

M11. *Analytic Geometry and Calculus.* College algebra including complex numbers and theory of equations; and plane and solid analytic geometry.

Calculus. The velocity and tangent problems; concepts of variable, function, limit and continuity; the derivative and its interpretations; the derivative of a power and a polynomial; applications to tangents and normals; derivatives of products, quotients, explicit and implicit functions; and parametric forms; applications to maximum and minimum value problems. *Five semester hours.*

Second Term

M12. *Calculus.* Differentials; the definite and indefinite integral; applications to plane areas; differentiation and integration of the exponential and logarithmic functions; trigonometric and inverse trigonometric functions, applications; integration of standard forms; application of differentiation to time-rate problems, velocity, acceleration, curvature; application of integration to area, volume, moments, length. *Five semester hours.*

THIRD CLASS YEAR

First Term

M21. *Calculus.* Approximate integrations—trapezoidal rule; mean value theorem and indeterminate forms; infinite series, including MacLaurin's and Taylor's series for expansion of functions; partial differentiation; multiple integrals and applications to area, volume, centroids, moments of inertia, etc.; differential equations of first order, particularly separable type; linear differential equations with constant coefficients; applications to physical sciences.

Probability and Statistics. Frequency distributions, mean and standard deviations; probability distributions. *Five semester hours.*

Second Term

M22. *Mechanics.* Vector algebra including scalar and cross products; forces, couples and moments; statics of a particle and a rigid body; vector calculus; kinematics of a particle and a rigid body; dynamics of a particle and a rigid body; work and energy principle; impulse and momentum principle. *Five semester hours.*

SECOND CLASS YEAR

First Term

M31. *Differential Equations.* Fundamental concepts; first order differential equations; linear differential equations; simultaneous differential equations; applications. *Three semester hours.*

Spherical Trigonometry. Geometry of the sphere; derivation of fundamental formulas; solution of right spherical triangles; solution of the practically important cases of oblique spherical triangles; application of spherical trigonometry to the terrestrial and celestial spheres. *One-half semester hour.*

ELECTIVE COURSES

M61. *Matrix Theory.* Algebra of matrices, determinants and systems of linear equations, linear independence, vector spaces, normal forms of matrices, characteristic equations. Prerequisite: M12. *Three semester hours.*

M62. *Modern Algebra.* The real number system, groups, integral domains, rings, fields, Boolean algebra, lattices, Prerequisite: M12. *Three semester hours.*

M63. *Probability and Statistics.* Frequency distributions, mean and standard deviations; probability distributions; the binomial, the Poisson and the normal; sampling theory; tests of significance; analysis of pairs of measurements. Prerequisite: M12. *Three semester hours.*

M64. *Numerical Analysis.* Interpolation; numerical differentiation and integration; summation of series; numerical solution of algebraic and transcendental equations; numerical solution of systems of linear algebraic equations; numerical solution of differential equations. Prerequisite: M12. *Three semester hours.*

M72. *Mathematics for Engineers and Physicists.* Partial differentiation; vector calculus, line, surface, and volume integrals; power series, Fourier series. Prerequisite: M31. *Three semester hours.*

M76. *Vector Analysis.* The geometry and algebra of vectors; vector calculus and the elements of the theory of vector fields; line and surface integrals; Stoke's and Gauss' theorems and their consequences; applications to geometry and dynamics used throughout to illustrate the methods developed. Prerequisite: M21. *Three semester hours.*

M81. *Mathematics for Engineers and Physicists.* Bessel functions; partial differential equations of mathematical physics; emphasis on applications. Prerequisite: M72. *Three semester hours.*

M82. *Introduction of Complex Variable.* Complex variables; harmonic functions; contour integrals and residues; conformal mapping; applications. Prerequisite: M81. *Three semester hours.*

SCIENCE DEPARTMENT

Head of Department: **Commander Frank A. Andrews, U.S. Navy**
Executive Officer: **Commander David G. Adams, Jr., U.S. Navy**
Senior Professor: **Ralph A. Goodwin**

The Science Department presents the fundamental concepts of the physical sciences, their application to present and future technology, and use of analytical methods in the solution of appropriate problems.

FOURTH CLASS YEAR

First and Second Terms

S11 and S12. *Chemistry.* Fundamentals of chemical theory with a study of the properties of metals and nonmetals. Among specific topics studied in *chemical theory* are the laws of chemical change, atomic structure and the periodic table, kinetic-molecular theory and the gas laws, solutions, chemical equilibrium, ionization, electrochemistry, radioactivity, nuclear reactions and nuclear energy from fission and fusion reactions. *Metals* studied include the alkali and alkaline earth metals, aluminum, and iron. *Nonmetals* studied are limited to oyxgen, hydrogen, halogens, nitrogen and sulfur families, carbon and simple carbon compounds. *Naval applications* include batteries, corrosion, water treatment, explosives, chemical warfare, the atomic bomb, the hydrogen bomb, and nuclear power plants for propulsion. Laboratory work includes both descriptive and quantitative experiments, and a brief introduction to the principles of semimicro qualitative analysis. *Eight semester hours.*

THIRD CLASS YEAR

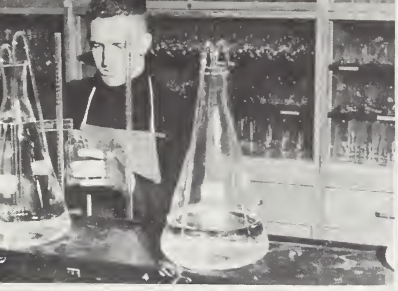
First and Second Terms

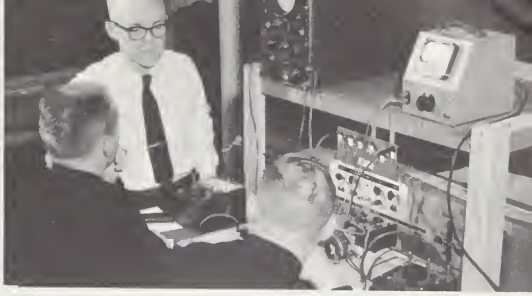
S21 and S22. *Physics.* Fundamental physical quantities, velocity and acceleration, Newton's laws of motion, energy and power, conservative forces, conservative fields, impulse and momentum, collisions, kinetic theory, temperature, heat, flow of electricity, magnetic fields, rotational motion, conservation of angular momentum, harmonic motion, waves, interference of waves, standing waves, diffraction, Doppler, reflection, refraction, sound, electromagnetic induction, electromagnetic waves, polarization, relativity, Michelson-Morley experiment, mass and energy, elementary particles, particles and waves, atomic structure, elementary quantum theory, nuclear forces, ranges, absorption, detection, radioactivity, nuclear reactions. *Ten semester hours.*

SECOND CLASS YEAR

First Term

S31. *Electrical Science.* Fundamental concepts of electric and magnetic fields. Laws of the electric circuit and introduction to network analysis. Principles of electrical measurements. R, L, C and M as fundamental circuit parameters, transients; alternating currents and voltages; phasor representation and complex algebra; single phase transformers. *Three and one-half semester hours.*





Second Term

S32. *Electrical Science.* Theory and principles of electronics. Fundamentals of electron emission and ballistics in vacuum and gas-filled tubes; tuned circuits and filters; transients and wave-shaping circuits; voltage stabilizers; transistors; radio and audio frequency amplifiers; cathode ray tubes and oscillographs. *Four and one-quarter semester hours.*

FIRST CLASS YEAR

First Term

S41. *Electrical Science.* Electronic systems, oscillators, modulation, transmitters, transmission lines, receivers, antennas and wave propagation, data transducers. *Three semester hours.*

Second Term

S42. *Electrical Science.* Polyphase circuits, magnetic circuits, electromechanical energy conversion, equivalent circuits, control systems. *Three semester hours.*

ELECTIVE COURSES

S62. *Advanced Inorganic Chemistry.* Fundamental concepts of inorganic chemistry including the following: atomic structure and the classification of the elements; atomic binding forces; complex ions and coordination compounds; reactions in aqueous and nonaqueous media; radioactivity and nuclear transformations. Prerequisites: S12. *Four semester hours.*

S71 and S72. *Atomic and Nuclear Physics.* The first semester is devoted principally to atomic physics, including atomic structure, spectra, X-rays, photoelectric effect, fundamental particles, special relativity, and an introduction to quantum phenomena. The second semester is nuclear physics, including radioactivity, nuclear structure and forces, nuclear reactions, fission, fusion, and interactions of radiation with matter. Prerequisites: S12, S22, M21. *Six semester hours.*

S74. *Principles of Underwater Acoustics.* This course is approximately one-half basic principles of acoustics which are necessary to a study of underwater sound, and one-half application of these principles to

underwater sound problems. Topics include oscillations, plane and spherical waves, radiation patterns, reflection coefficient, attenuation, velocity, ray theory, wave theory, scattering, reverberation, fluctuations, echo ranging and noise. Prerequisites: S22, M21. *Three semester hours.*

S75. *Principles of Optics.* Geometrical and physical optics. Topics studied are optical instruments, aberrations and their correction, interference, diffraction, polarization, and scattering. The electromagnetic theory of radiation is introduced, and the principles of optics are applied to radar, infra-red, ultra-violet, X-rays, and other types of radiation. Prerequisites: S22, M21. *Three semester hours.*

S81. *Electric Circuit Analysis.* A study of communication circuits, network theorems, modal and mesh equations, filters and transmission lines. Prerequisites: S32, M31. *Three semester hours.*

S82. *Transient Analysis of Linear Systems.* A study of electrical transients in linear networks using classical and Laplace transform methods. Prerequisite: S81. *Three semester hours.*

S86. *Neutron Physics.* A study of the production and reactions of neutrons. Among the topics considered are the emission, moderation, diffusion, and absorption of neutrons. Measurements, such as those on neutron distribution, scattering, absorption, and reflection coefficients will make use of the subcritical assembly and associated equipment. Prerequisites: S71, S72. *Three semester hours. Two lectures and one two-hour laboratory each week.*

S87. *Introduction to Quantum Mechanics.* An introductory study of Quantum Mechanics with emphasis on the physical principles involved. Topics to be covered are as follows: Basic postulates, solutions of the Schroedinger wave equation for special cases in one and three dimensions, perturbation theory, Pauli exclusion principle, relativistic wave equation and origin of electric spin. Prerequisites: S71. *Three semester hours.*

SPECIAL ELECTIVE COURSE

The following course is offered under the cognizance of the Director of Science and Engineering:

SM92. *Science Research Project* (open to class of 1961 and subsequent classes). A creative, scientific research project in the field of the student's interest, approved by the science research adviser in the cognizant department. The project may be undertaken only by those in the third year of participation in the Advanced Science and Mathematics Seminar. *Three semester hours.*

Steps to main reading room in library.

Foreign Language Building.

Social Sciences and Humanities

Director: Captain John N. Myers, U.S. Navy.

From its inception, the Navy has recognized that its officers must be able to express themselves effectively, have an appreciation of national and international interests that may become matters of professional naval concern, and prove capable of serving their country at home, on the high seas, and abroad. Toward the preparation of the midshipman to fulfill those aspects of his role as a naval officer, the Departments under the Director of Social Sciences and Humanities conduct courses in written and spoken language, both English and foreign, the appreciation of literature, the basic concepts of government and economics, and the history of the Western world with special attention to its diplomatic and naval aspects. The grouping of the humanistic studies at the Naval Academy permits careful integration of the program of studies, with particular attention to the midshipman's written and oral English throughout the 4 years.

Specially constituted option sequences in the social sciences or humanities are available to those midshipmen who validate either one or two years of a foreign language. These options are in literature, political science, history, and third and fourth year language studies, in order to provide additional depth in a selected area of study.

ENGLISH, HISTORY, AND GOVERNMENT DEPARTMENT

Head of Department: Captain David M. Rubel, U.S. Navy
Executive Officer: Commander Micajah R. Wyatt, U.S. Navy
Senior Professor: William W. Jeffries

The English, History, and Government Department, in addition to developing ability to express ideas clearly in speech and writing, provides a factual knowledge of historical events and the functions of government, and an introduction to economics, international relations, geography, and masterpieces of literature. There are advanced sections in all courses except during First Class year.

Description of Courses

FOURTH CLASS YEAR

Summer Term

H10. *Naval History: Traditions and Leadership.* Familiarization with the library and drill in the use of its facilities; selected reading; reading assignments in naval history and tradition, with supplemental lectures, and an examination.

First and Second Terms

H11 and H12. *Composition and Literature.* Primary emphasis is on composition—exposition, narration, and argumentation. Writing techniques are illustrated by selections from leading American authors during the first term and from leading English authors during the second term. The course is divided into functional units, such as: autobiographical writing, character portrayal, narration and reporting, comparison and contrast, development of an idea, correspondence, argument, and public speaking. Each unit is concluded by a theme, quiz, or speech. There are several library periods, coinciding with theme days. *Six semester hours.*

H13 and H14. *Composition and Literature, Advanced Course. This* course is designed for midshipmen with exceptional aptitude for composition and literature. The general objectives are the same as those of H11 and H12 except that there is more emphasis on critical writing. The major types of American and English literature are studied in the first and second terms respectively. These major types are represented by complete works of outstanding men of letters. *Six semester hours.*

THIRD CLASS YEAR

First Term

H21. *Modern European History.* The objective of the course is to give the midshipmen a knowledge of the historical development and overseas impact of events in Europe since 1789. Lectures and library periods broaden the scope of the textbook. *Three semester hours.*

Second Term

H22. *United States Foreign Policy and Geography.* The course objective is to teach the midshipmen the diplomatic history of the United States and the principal aspects of the past and present U.S. foreign policies. The lessons in geography are designed to develop an appreciation of geographic forces in world affairs. *Three semester hours.*

SECOND CLASS YEAR

First Term

H31. *United States Government.* The objectives of this course are: (1) to implant in the midshipmen an understanding of the basic concepts of American democracy; (2) to establish an understanding of the Constitution; (3) to familiarize the student with the structure and functions of his government and the forces and factors which influence its operation; and (4) to compare his government with other types of government. *Two semester hours.*

Second Term

H32. *Economics and Speech.* Laws of economic behavior, American economic institutions, the role of government in the economy in peace and war, elements of personal finance. The portion of the course devoted to speech emphasizes speech composition and platform performance, aiming at improving the midshipmen's general proficiency in oral self-expression. *Two and three-quarters semester hours.*

H34. *Economics and Speech, Advanced Course.* This course is designed for midshipmen who have demonstrated particular proficiency in the social sciences. The objectives are similar to those of the basic course, but the level of analysis is commensurate with the superior abilities of the students. Some emphasis is given to economic methodology and to the history of economic thought. *Two and three-quarters semester hours.*

FIRST CLASS YEAR

First Term

H41. *Naval History.* The objective of this course is to provide the midshipmen with information basic to their profession concerning:

(1) the development of naval ships and weapons; (2) the evolution of naval tactics and amphibious doctrine; (3) the reasoning behind historic strategic decisions; (4) the influence of sea power upon history; and (5) the qualities of character and professional competence which have made great naval leaders. *Three and one-half semester hours.*

Second Term

H42. *Advanced Composition and Literature.* The objective of this course is to develop the midshipman's intellectual maturity: (1) by exploring some of the problems of human existence; (2) by deepening his understanding of human personality; (3) by sharpening his perceptions of literary values through writings and discussion; and (4) by improving his powers of oral and written expression. Course work involves the reading and the discussing of at least five masterpieces selected by the instructor from world literature, past and present. The readings and the discussions in any one class section are related to a single thematic objective. *Three and three-quarter semester hours.*

First and Second Terms

Research Paper. The research paper project is designed to introduce the midshipmen to the scientific method of analyzing the materials of history, to familiarize them with research methods, and to require of them an extended piece of individual work in which they combine their knowledge of history and their skill in composition. The research paper project begins early in the first term and extends well into the second.

After-Dinner Speaking. Throughout First Class year, small dinners are given under the auspices of the English, History, and Government Department, with the primary objective of providing a setting for midshipmen to deliver after-dinner speeches under realistic circumstances. Guests of honor and faculty members are present. Each member of the First Class participates in at least two of these dinners.

In the Severn Room.

H61. *Modern American Literature.* Readings from the major writers of American fiction, poetry, and the drama since 1920. Especial attention to representative works of such authors as Hemingway and Faulkner, Eliot and Frost, O'Neill and Williams. Prerequisites: H11, H12. *Three semester hours.*

H62. *Modern British Literature.* Readings from the major writers of British fiction, poetry, and the drama since 1920. Especial attention to representative works of such authors as Joyce, Huxley, and Orwell; Auden and Dylan Thomas; Shaw, Synge, and O'Casey. Prerequisites: H11, H12. *Three semester hours.*

H63. *Projects in Writing.* Practice in writing in one or more of the following forms: narration, description, the essay, the magazine article. The materials for writing are drawn in part from the student's special field of interest. Prerequisites: H11, H12. *Three semester hours.*

H64. *Classical Literature.* This course is designed to give the midshipmen an introduction to the important literature of classical Greece and Rome, such as Homer, Sophocles, Virgil, and Ovid. Some emphasis is also placed on the mythology and religion of the age. Prerequisites: H11, H12. *Three semester hours.*

H65. *United States History.* A survey of the principal political, economic, and social ideas and institutions of the American people since 1789. Attention is also paid to geographical considerations, religious currents, progress in literature and the arts, and the development of foreign policies. Emphasis is placed upon achieving a broad picture of the foundations of current attitudes toward domestic problems and foreign affairs and upon the characteristics of the democracy which American military personnel are sworn to defend. Prerequisites: None. *Three semester hours.*

H66. *History of Russia.* A chronological introduction to the political, cultural, social history of Russia from the founding of the Moscow Principality through its expansion into the present Soviet Union. The growth of national consciousness, drive, and objectives will be emphasized, together with the factors fostering the anomalous survival of the principle of autocracy from the 13th century Mongol Invasion. Prerequisite: H21. *Three semester hours.*

H67. *History of Europe, 1500–1815, from Renaissance through Napoleon.* A survey course in which the following major developments will be studied: the rise of Spain, England, and France as national states, the development of absolute monarchy, the era of oceanic exploration and

of overseas colonization, the rise of capitalism, the Protestant Revolt or Reformation, the Scientific Revolution, the development of constitutional government, the rise of Russia and Prussia, the French Revolution and Napoleon. Readings presenting differing points of view will be used as a basis of discussion. Prerequisites: None. *Three semester hours.*

H68. *Problems of Great Britain as a World Power.* A survey emphasizing: the factors which made Great Britain the leading world power in the 19th century; the development of the British Empire; the problems arising from the position of world power; the foreign, economic, and military policies designed to meet these problems, particularly those directed against Russian expansion; and the impact of the two World Wars of the 20th century upon the position of Great Britain and the British Commonwealth of Nations. Prerequisite: H21. *Three semester hours.*

H69. *United States Economic History.* A study of the American economy from colonial times to the present, with special emphasis on the interrelations between the ways Americans have made a living and their social and political attitudes, on America's role in the world economy, and on the rise of the large corporation. Prerequisites: None. *Three semester hours.*

H71. *The Modern Novel.* A study of the national characteristics, cultural traditions, and social and political conditions of the principal nations of the world as represented in a selection of the novels of major contemporary writers such as Lewis, Hemingway, Forster, Mann, Pasternak, Romains, Silone, etc. The modern novel as a key to the characteristics and problems of the peoples with whom a naval officer might come in contact professionally. Prerequisites: H11, H12. *Three semester hours.*

The Macedonian Monument.

H72. *The Modern Drama.* A study of the national characteristics, cultural traditions, and social and political conditions of the principal nations of the world as represented in a selection of the plays of the major contemporary writers, such as O'Neill, Eliot, O'Casey, Giraudoux, etc. The modern drama as a key to the characteristics and problems of the peoples with whom a naval officer might come in contact professionally. Prerequisites: H11, H12. *Three semester hours.*

H73. *The World Since 1914.* This course emphasizes the backgrounds and causes of World Wars I and II, the development of totalitarianism, the failure of collective security in the interwar period, the diplomacy of coordination during World War II, the United Nations, and significant trends in the Far East, Middle East, Africa, and Europe after World War II. Prerequisites: H21, H22. *Three semester hours.*

H74. *Comparative Government and Comparative Economic Systems.* A comparative study of the governments of England, France, Russia, China, and India, with full attention to civil rights and economic controls as well as the machinery of government. The approach is dynamic rather than static. The implications of the various philosophies of government in foreign relations are considered. Prerequisite: H31. *Three semester hours.*

H75. *American Democracy: Theory and Practice.* An examination of the doctrines of American Democracy: the origins of its rationale traced back into the old world in place and in time. Three and a half centuries of application and experience in the new world; impact of individuals such as Franklin, Jefferson, Hamilton; and the impact of certain events and forces such as wars, the Industrial Revolution, the Western Frontier, and the quest for social justice. Prerequisites: None. *Three semester hours.*

H76. *Communism: Theory and Practice.* A study of the philosophy of communism from the writings of Engels, Marx, Lenin, and Stalin; history of the Internationals; the role of the Comintern and the "international party;" relations of the Soviet Union with radical parties outside Russia, and with European Social Democratic parties; policies in the satellite nations; the security problem in the Western democracies. Prerequisite: H31. *Three semester hours.*

H77. *History of the Far East.* A survey of the principal political, economic, and social ideas and institutions in the important nations of the Far East. Special emphasis is placed upon tracing 19th and 20th century developments in Russia, China, and Japan as a foundation for understanding the relations of these nations with the rest of the world, particularly with the United States. Prerequisites: H21, H22. *Three semester hours.*

H78. *The Far Eastern Relations of the United States.* A consideration of the development of the diplomatic, cultural, and economic relations of the United States and the Far East. Special emphasis is placed on developments since 1850, particularly upon the interaction of the foreign policies of the United States with those of the major Far Eastern powers as the latter were stimulated by imperialism, nationalism, industrialism, democracy, and communism. Prerequisite: H22. *Three semester hours.*

H79. *Political Theory.* The philosophic bases of the various forms of government, with emphasis on the roots of democracy; the political writings of Plato, Aristotle, St. Thomas Aquinas, Hobbes, Locke, Montesquieu, Hamilton, Jefferson, Madison, Hegel, Nietzsche, Pareto, Wilson; the great documents—Magna Carta, the Declaration of Independence, the U.S. Constitution, the Atlantic Charter, etc.; legal codes; the Common Law. Prerequisites: H21, H22. *Three semester hours.*

H81. *Advanced Economics and Problems of Defense Mobilization.* Intermediate level economic analysis, with emphasis on policy problems in war and cold war: production and manpower programing, allocating of materials, stockpiling, wage and price controls, rationing, wartime fiscal and monetary policies. Prerequisite: H32. *Three semester hours.*

H82. *Personal Finance and Investments.* A study of the general principles of savings plans, periodic investment programs, investment companies, personal trusts, stock and bond portfolio management, mortgages, and property and income taxes. Prerequisite: H32. *Three semester hours.*

H83. *Introduction to Philosophy and Logic.* A brief study of the problems and methods of philosophy and the solutions suggested by various philosophers. Included is a nontechnical introduction to the analysis of deductive and inductive reasoning, sound definition, and logical fallacies. Prerequisites: None. *Three semester hours.*

H84. *Modern Thought.* A survey of those thinkers of the last 100 years whose ideas and thought systems continue to shape our contemporary world: Darwin, Marx, Freud, Marshall, James, Dewey, Boas, Keynes, and others. Prerequisite: H21. *Three semester hours.*

H85. *History of Latin America.* A survey designed to provide reasonable familiarity with the origins and growth of our southern neighbors. The complex threads of independence won by viceroyalties, fragmentation by nationalism, and the rise of national leaders will be subordinated in emphasis to the development of the forces shaping Pan-Americanism. The significance for Latin America, the United States, and the world of the ideal of *La Patria Grande* will be explored. A reading knowledge of Spanish or Portuguese will be desired, though not required. Prerequisites: None. *Three semester hours.*

H86. *Elements of Law.* Introduction to jurisprudence. The essentials of the law of crimes, contracts, torts, agency, real and personal property, domestic relations, testaments, negotiable instruments, and taxation, with a view of familiarizing the student with those branches of the law he is most likely to encounter in his role as a citizen and officer of the Armed Forces. Prerequisite: H31. *Three semester hours.*

H87. *Contemporary Problems and International Relations.* This course deals with the present-day problems confronting United States diplomacy in Europe, the Far East, the Middle East, and Latin America. It provides extensive opportunity for the study of policy as well as appropriate diplomatic strategy to be applied as possible solutions to the problems. The course will also strive to develop deeper comprehension of the "news behind the news" in current headlines regarding major domestic issues. Prerequisites: H22, H23. *Three semester hours.*

H88. *United States Military History and Policy.* A survey of United States military history and policy from colonial times to the present. It provides extensive opportunity to analyze major land and pertinent sea campaigns, problems of logistics, the implementation of national policy by the military forces and the relationship between the United States military staffs and the civil government, the effect of air power on strategy, and concepts of nuclear warfare. Prerequisite: H41. *Three semester hours.*

H89. *Naval Biography.* Selected readings from the classics of naval biography, to enrich appreciation of the naval career. The lives of outstanding officers will be explored and discussed for further comprehension of the common denominators found in the attainment and exercise of effective command in various eras and navies. Prerequisite: H41. *Three semester hours.*

H91. *Seminar in Literature I* (*Representative Contemporary Novelists*). Intensive study of selected works of six modern novelists, Moravia, Camus, Silone, Faulkner, Greene and Malraux, as representatives of contemporary points of view on the political, social and ethical problems of the twentieth century. Discussions, collateral readings, reports, individual reading projects. Prerequisites: H11 or H13, H12 or H14. *Three semester hours.*

H92. *Seminar in Literature II* (*Representative Contemporary Playwrights, Poets or Short Story Writers*). Intensive study of modern drama, poetry, or short fiction, American, British and continental, as representative of contemporary points of view on the political, social and ethical problems of the twentieth century. (Only one literary type will be studied in any one year, as determined by the interests of the midshipmen enrolled.) Discussions, collateral readings, reports, individual reading projects. Prerequisites: H11 or H13, H12 or H14. *Three semester hours.*

H93. *Seminar in History.* Directed individual investigation and group discussion in special fields of interest in European and United States Histories. This work will be accomplished by readings and lectures on the nature of historical research, the problems of causation and of interpreting evidence, and the major schools of historical interpretation. It will lead to the writing of a paper in the nature of a senior thesis. Prerequisites: H21, H22, H31. *Three semester hours.*

H94. *Seminar in Russian Military and Naval Doctrine.* The evalution of Russian strategic and tactical concepts, the interrelationship of armed services, the development of material, education and training, and illustrative campaigns. Emphasis will be placed upon outstanding Russian formulators and practitioners of military and naval doctrine. The influence of Stalin upon Soviet Military Doctrine and its differences with conventional concepts are emphasized. A reading knowledge of the Russian language is desirable but not required. Prerequisite: H41. *Three semester hours.*

H95. *Seminar in Philosophy of War.* A survey of the ethical problems involved in war. It provides for the study of the causes and nature of war, an examination of limited and absolute war and the relationship between military staffs and civil governments, and an analysis of the writings of the leading men on the subject. Prerequisites: None. *Three semester hours.*

H96. *Seminar in Naval History.* Designed to provide opportunity to pursue interest aroused in a phase of naval history. A midshipman, with the supervision of the instructor, will develop his own project of reading or research. The group will discuss oral or written reports submitted at such intervals as will keep discussion fruitful in exploring to a profitable end those problems or aspects of naval history which may be involved. Prerequisite: H41. *Three semester hours.*

H97. *Public Speaking.* This course is designed to improve the midshipmen's general proficiency in oral self-expression. The course will emphasize speech composition and platform performance. Attention will be paid to debate techniques, conference procedures, briefings, and *ex tempore* speaking. Prerequisites: None. *Three semester hours.*

H98. *Parliamentary Procedures and Group Discussion.* A study of both formal and informal group speech activity and parliamentary practice based on *Roberts' Rules of Order.* Prerequisite: H97. *Three semester hours.*

H99. *Major British Writers.* Intensive study of selected works of principal figures in the literature of England: Chaucer, Shakespeare, Milton, Pope, Johnson, Wordsworth, Dickens, Browning and Joyce; their thought and art, their historical background, their significance as representatives of their times, and their contributions to the culture of the English-speaking nations. This course includes only works not previously studied in prerequisite or other elective courses. Prerequisites: H11 or H13, H12 or H14. *Three semester hours.*

On European cruise—
Putting language instruction to practical use.

FOREIGN LANGUAGES DEPARTMENT

Head of Department: Captain Demetrius J. Vellis, U.S. Navy
Executive Officer: Commander Richard D. Lazenby, U.S. Navy
Senior Professor: Rene F. Muller

The objective of the department is to provide every midshipman with a working ability in one foreign language, and in addition, a foundation for the later acquisition of a more complete knowledge of the area, the civilization, the customs, and the history of the people whose language is being studied. The courses of study are French, German, Italian, Portuguese, Russian, and Spanish. Insofar as practicable, each midshipman is permitted to select the language he will study. Instruction is given in pronunciation, vocabulary, and the principles of grammar, with particular emphasis being placed on oral drill and the development of the ability to think and converse in the language.

Description of Courses

FOURTH CLASS YEAR

First and Second Terms

L11 and L12. *Language.* Brief elementary pronunciation course conducted using departmental pamphlets or suitable regular texts; essentials of grammar; conversation on everyday life and area material. Enriched and accelerated courses are offered to qualified midshipmen. *Six semester hours.*

L13 and L14. *Language, Advanced Courses.* Accelerated Course, First Term. Thereafter parallels the Third Class Regular Course. *Six semester hours.*

THIRD CLASS YEAR

First and Second Terms

L21 and L22. *Language.* Brief review of grammar; development of speaking and writing ability based on readings of intermediate difficulty selected from stories, plays, contemporary writings and naval phraseology. Enriched and advanced courses are offered to qualified midshipmen. *Five semester hours.*

L23 and L24. *Language, Advanced Courses.* Advanced conversation and composition based on readings selected from cultural and modern writings and from writings on naval subjects of a professional nature. Prerequisite: L14. *Five semester hours.*

ELECTIVE COURSES

French

L51F and L52F (same as L11F and L12F). *Beginning French.* Offered to Third, Second and First Class midshipmen as a second language. No credit granted unless both terms are satisfactorily completed. Prerequisite: None. *Six semester hours.*

L61F and L62F (same as L21F and L22F). *Intermediate French.* No credit granted unless both terms are satisfactorily completed. Prerequisite: L12F or L52F. *Six semester hours.*

L71F and L72F. *Advanced Written and Oral French.* Aims to develop accuracy and ease in the active use of French. Provides ample practice in writing and speaking. Includes vocabulary building and systematic review of grammar. Two terms, but each term may be taken independently. Prerequisite: L14F, L22F, or L62F. *Three semester hours each term.*

L73F and L74F. *Readings in French Literature.* Plays, novels, poems and anthology selections by such famous authors as: Corneille, Racine, Molière, Marivaux, Voltaire, Rousseau, Hugo, Lamartine, Balzac, Flaubert, Baudelaire, Zola, Proust, Gide, Mauriac. Ample practice in conversation. Two terms, but each term may be taken independently. Prerequisite: L14F, L22F, or L62F. *Three semester hours each term.*

L81F. *Contemporary French Literature.* Selected works of such influential modern authors as Proust, Mauriac, Malraux, Romains, Gide, Camus. Ample practice in conversation. Prerequisite: L14F, L22F or L62F. *Three semester hours.*

L82F. *Contemporary France.* Readings and discussions designed to provide knowledge and understanding of the French people and of

French national life today. Ample practice in conversation. Prerequisite: L14F, L22F, or L62F. *Three semester hours.*

German

L51G and L52G (same as L11G and L12G). *Beginning German.* Offered to Third, Second, and First Class midshipmen as a second language. No credit granted unless both terms are satisfactorily completed. Prerequisite: None. *Six semester hours.*

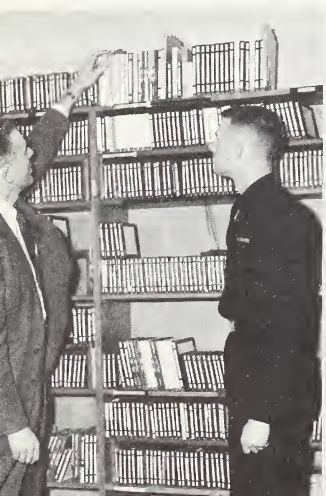
L53G and L54G. *Scientific German.* A beginning course in reading and translation, intended for those who have not studied this language at the Naval Academy, and who desire only a reading knowledge of scientific German. No credit granted unless both terms are satisfactorily completed. Prerequisite: None. *Six semester hours.*

L61G and L62G (same as L21G and L22G). *Intermediate German.* No credit granted unless both terms are satisfactorily completed. Prerequisite: L12G or L52G. *Six semester hours.*

L71G. *Advanced German.* Selected readings, magazines and periodicals, to develop skill and facility in writing and fluency in oral discussion. Systematic drill to enable the midshipman to broaden his vocabulary range in all fields. Prerequisite: L22G or L62G. *Three semester hours.*

L73G. *German Literature of the Twentieth Century.* Literary movements and selected authors: Gerhart Hauptmann, Thomas Mann, Hermann Hesse, Wolfgang Borchert, Franz Kafka, Elisabeth Langgasser, Ernest Wiechert, and others. Prerequisite: L22G or L62G. *Three semester hours.*

Selecting a tape for language study.



L74G and L75G. *German Naval Histories and Novels.* This course is intended to develop skill in naval terminology and to broaden the knowledge of the midshipman in his special field. Basically World Wars I and II (each term may be taken independently). Prerequisite: L22G or L62G. *Three semester hours each term.*

L81G and L82G. *Goethe, Schiller and Lessing.* Selected works from the three great writers of German literature. Their influence on the literature and history of the times will be emphasized. Prerequisite: L22G or L62G. *Three semester hours each term.*

L83G and L84G. *German Literature Since Goethe.* An introduction to the German literary movements from the Liberal Age to the present. Representative works of the more important authors of each genre and period will be read and discussed. Prerequisite: L22G or L62G. *Three semester hours each term.*

Italian

L51I and L52I (same as L11I and L12I). *Beginning Italian.* Offered to Third, Second, and First Class midshipmen as a second language. No credit granted unless both terms are satisfactorily completed. Prerequisite: None. *Six semester hours.*

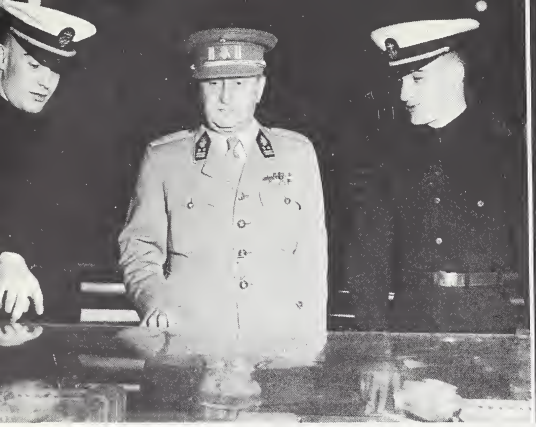
L61I and L62I (same as L21I and L22I). *Intermediate Italian.* No credit granted unless both terms are satisfactorily completed. Prerequisite: L12I or L52I. *Six semester hours.*

L71I. *Advanced Italian.* This course offers practice in original oral composition and conversation. Selected readings, magazines and periodicals provide sources of drill materials. Prerequisite: L22I or L62I. *Three semester hours.*

L73I and L74I. *Italian Culture and Civilization.* A survey of the major manifestations of Italian genius, from the Middle Ages to the present, in literature, art, philosophy, and science. (Two terms, but each term may be taken independently.) Prerequisite: L22I or L62I. *Three semester hours each term.*

L81I. *The Age of Petrarch and Boccaccio.* This course presents the development of the lyric and the short-story with representative readings in each. Prerequisite: L22I or L62I. *Three semester hours.*

L82I. *Dante and His Times.* The Divina Commedia is read and analyzed in the light of the literary, political and religious ideals of the Middle Ages. Prerequisite: L22I or L62I. *Three semester hours.*



Conversing With a Foreign Student

Explaining a point after class.

Portuguese

L51P and L52P (same as L11P and L12P). *Beginning Portuguese.* Offered to Third, Second, and First Class midshipmen as a second language. No credit granted unless both terms are satisfactorily completed. Prerequisite: None. *Six semester hours.*

L61P and L62P (same as L21P and L22P). *Intermediate Portuguese.* No credit granted unless both terms are satisfactorily completed. Prerequisite: L12P or L52P. *Six semester hours.*

L71P. *Advanced Portuguese.* Advanced study of the language with practical written and oral work leading to increased facility in the use of Portuguese. Selected readings and current periodicals will be used as source materials. Prerequisite: L22P or L62P. *Three semester hours.*

L73P. *Introduction to Portuguese Civilization and Literature.* Portuguese geography, history, economy, and arts—general readings. Portuguese literature—selections from Gil Vicente, Camoes, Garrett, etc. Informal lectures. Discussion. Prerequisite: L22P or L62P. *Three semester hours.*

L74P. *Introduction to Brazilian Civilization and Literature.* Brazilian geography, history, economy, and arts—general readings. Brazilian literature—selections from Gilbert Freyre, Verissimo, Benedetti, etc. Informal lectures and discussion. Consideration of contemporary problems in Portugal and Brazil and relations of these countries with the United States. Oral presentation on these and allied subjects. Prerequisite: L22P or L62P. *Three semester hours.*

L81P. *The Brazilian Short Story and Theatre.* Selected readings in the short story and the theatre from contemporary Brazilian writers. Monteiro Lobato, Pereira de Almedia, Callado, etc. Informal lectures. Discussion. Prerequisite: L22P or L62P. *Three semester hours.*

L82P. *Contemporary Naval, Technical, and Nontechnical Portuguese.* Selected readings on naval and technical subjects and readings in current nontechnical periodicals. Preparation or oral presentations and briefings covering situations in which a naval officer might find himself in Portuguese-speaking areas. Prerequisite: L22P or L62P. *Three semester hours.*

Russian

L51R and L52R (same as L11R and L21R). *Beginning Russian.* Offered to Third, Second, and First Class midshipmen as a second language. No credit granted unless both terms are satisfactorily completed. Prerequisite: None. *Six semester hours.*

L61R and L62R (same as L21R and L22R). *Intermediate Russian.* No credit granted unless both terms are satisfactorily completed. Prerequisite: L12R or L52R. *Six semester hours.*

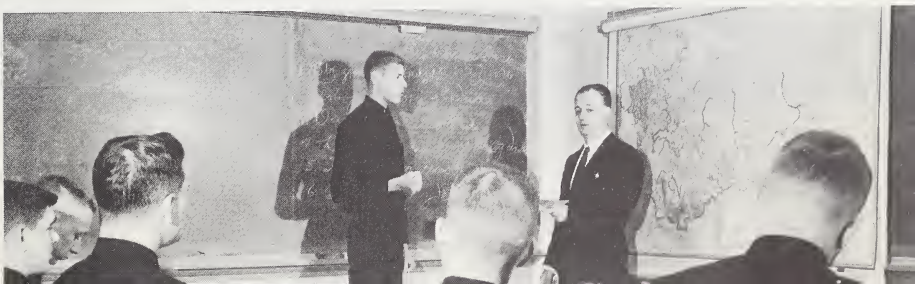
L71R. *Advanced Russian.* Development of accuracy and ease in the use of Russian through oral interpretive reading of narrative and dramatic literature, and through the use of transcriptions by contemporary Russian artists. Prerequisite: L22R or L62R. *Three semester hours.*

L72R. *The Soviet Press.* Analysis of articles from the current Soviet press. *Fel'eton*, Party appeal, reports, news. Objective is to acquire a critical reading ability of Soviet periodicals. Discussions to be conducted in Russian. Prerequisite: L22R or L62R. *Three semester hours.*

L73R and L74R. *Scientific Russian.* A reading course in current Soviet scientific literature. Material will be selected from current periodicals, textbooks and encyclopedias. Special attention will be devoted to the administrative framework of theoretical and applied research. Two terms, but each term may be taken independently. Prerequisite: L22R. *Three semester hours each term.*

L81R. *Russian History in Literary Works.* Study of historical epochs via dramas and tales. Reports and discussions in Russian. Prerequisite: L22R or L62R. *Three semester hours.*

L82R. *The 19th Century Russian Novel.* Readings from the works of L. N. Tolstoy, I. S. Turgenev, F. M. Dostoevsky. Reports and discussions in Russian. Prerequisite: L22R or L62R. *Three semester hours.*



L83R. *Anton P. Chekhov.* Study of selected plays and short stories of A. P. Chekhov. Objective is to increase mastery of contemporary Russian vocabulary and to develop an understanding of Chekhov's world. Prerequisite: L22R or L62R. *Three semester hours.*

Spanish

L51S and L52S (same as L11S and L12S). *Beginning Spanish.* Offered to Third, Second, and First Class midshipmen as a second language. No credit granted unless both terms are satisfactorily completed. Prerequisite: None. *Six semester hours.*

L61S and L62S (same as L21S and L22S). *Intermediate Spanish.* No credit granted unless both terms are satisfactorily completed. Prerequisites: L12S or L52S. *Six semester hours.*

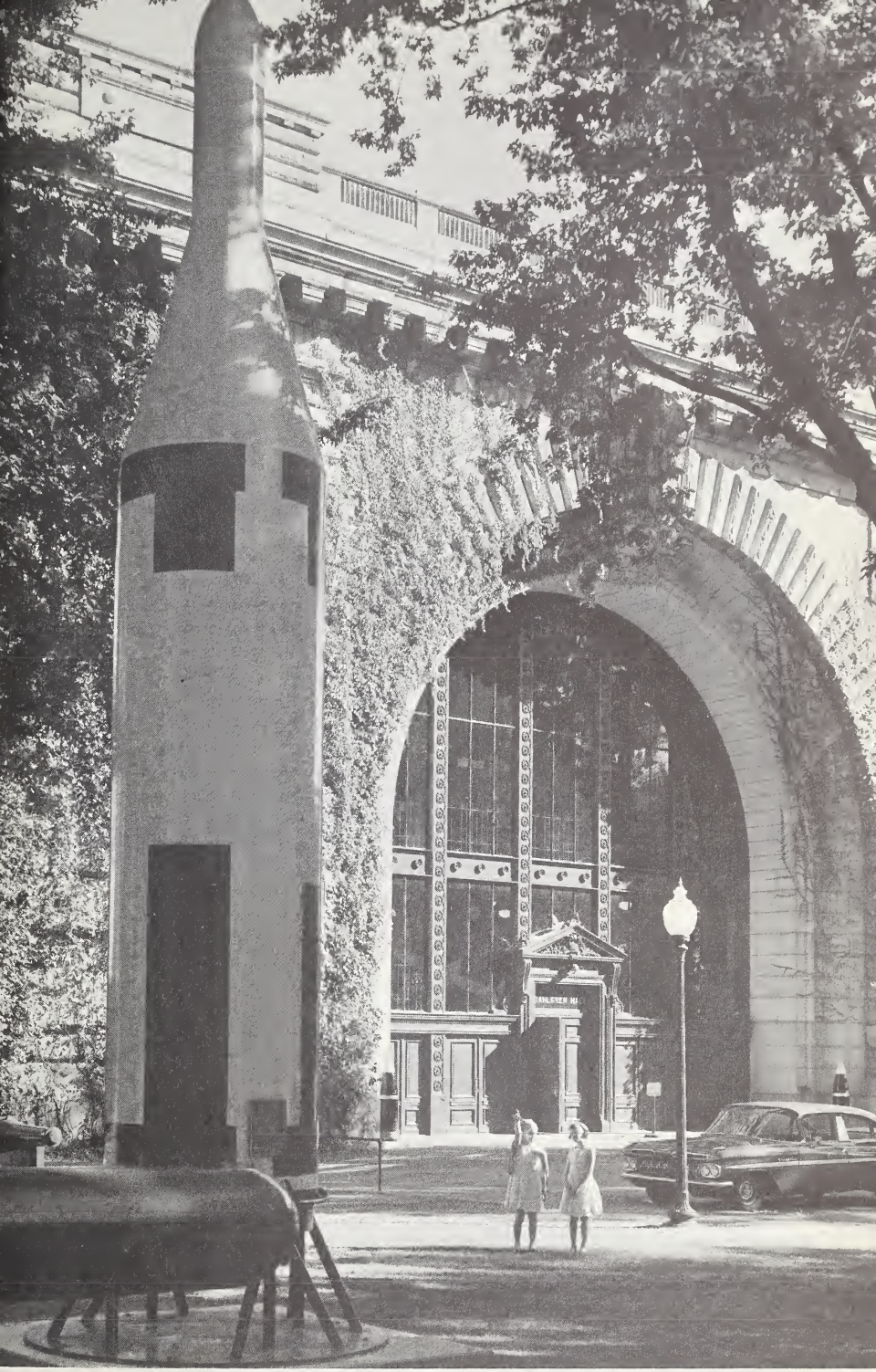
L71S. *Advanced Spanish Composition and Conversation.* For students who already have a basic knowledge of Spanish grammar and experience in spoken language. This course is intended to develop facility in writing and speaking correct and concise Spanish. Discussions, short speeches and oral and written reports in Spanish. Prerequisite: L14S, L22S or L62S. *Three semester hours.*

L73S. *Survey of Spanish Literature.* First Term. A background course to give the student an understanding of the main features of the great literary movements of Spain, with careful reading and critical discussion of the major literary creations. Discussions, written and oral reports in Spanish. Prerequisite: L14S, L22S or L62S. *Three semester hours.*

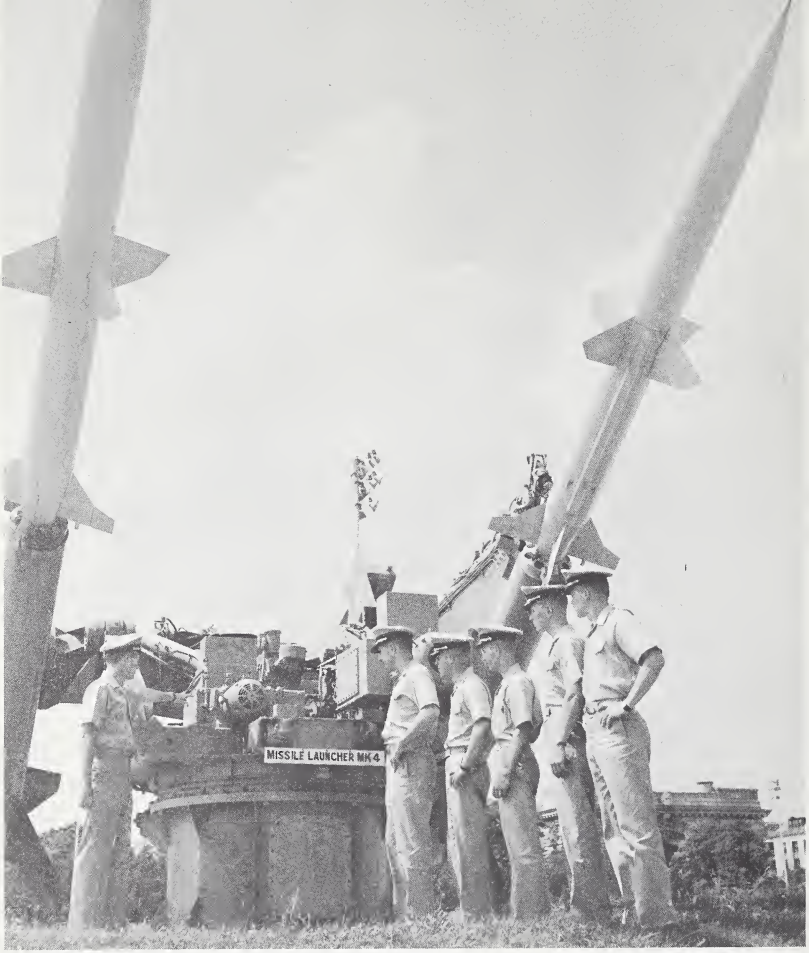
L74S. *Survey of Spanish Literature.* Second Term. Continuation of L73S, but may be taken independently. Prerequisite: L14S, L22S or L62S. *Three semester hours.*

L81S. *Readings in Current Periodical Literature.* This course is designed to give students experience in reading and discussing articles of current interest. Emphasis upon articles dealing with scientific and technical subjects and with international relations. Discussions, oral and written reports in Spanish. Prerequisite: L14S, L22S, or L62S. *Three semester hours.*

L82S. *Contemporary Spanish Literature.* This course will present a study of important Spanish and Spanish American writers of the 20th century through the reading of representative stories, plays, essays, and poems. Prerequisite: L14S, L22S or L62S. *Three semester hours.*



Dalgren Hall and Polaris Missile.



Naval Science

Director: **Capt. Harry B. Hahn U.S. Navy**

The academic courses taught by the Naval Science division are generally given within the last 2 years. It is here that the midshipman applies the basic education acquired in his earlier studies to the technical naval installations with which he will work as a commissioned officer. The Navy operates in a highly complex environment, and the graduate must be prepared to cope with operational and technical problems covering the complete spectrum from undersea warfare to ballistic missilery. In his Naval Science studies, the midshipman establishes a foundation of professional competence. His courses emphasize the application of basic principles to the solution of naval problems, rather than details of specific equipment or operational techniques.

COMMAND DEPARTMENT

Head of Department: Capt. William E. Lamb, U.S. Navy

Executive Officer: Comdr. Edward C. Hines, Jr., U.S. Navy

The objective of the department is to educate midshipmen in piloting, navigation, meteorology, naval tactics, and naval operations in the air, on the surface, and under the seas. It includes formal instruction in leadership, seamanship, military law, international law, strategy, and the organization and administration of the Navy.

The department courses are conducted in two phases. The first, extending over the first two years is enhanced by practice cruise training during summer terms, and provides a progressive indoctrination in elements of the naval profession. The second phase, extending over the last two years, provides navigation, more advanced elements of naval operations, and the techniques of naval leadership and administration. Experience in aircraft is gained during Second Class summer, while participation in an advanced practice cruise occurs First Class summer. The midshipman is thus developed throughout the course for a naval career.

Description of Courses

FOURTH CLASS YEAR

Summer

C10. *Basic Seamanship.* Practical instruction in seamanship, including marlinspike seamanship, boat nomenclature, sailing, naval communications and piloting.

First and Second Terms

C11 and C12. *Seamanship.* Drills in deck seamanship, boat handling, piloting, operations, tactics, Rules of the Road, lookout procedures, and communications. *Three-quarter semester hours.*

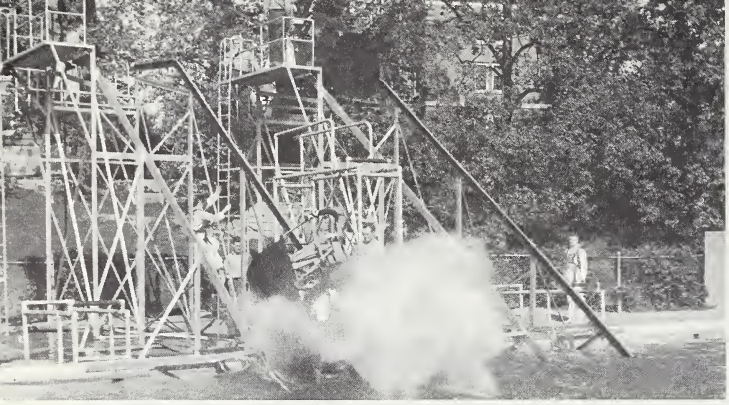
THIRD CLASS YEAR

Summer Cruise

During his cruise, the third classman is introduced to life aboard ship. He learns seamanship and piloting, stands watches, operates boats, and participates in drills. He performs practical factors covering his watches, and drills in operations and seamanship.

Second Term

C22. *Seamanship.* Drills devoted to Rules of the Road, communications, recognition, and instruction in fleet operations. *¼ semester hour.*



Dunker drill.

SECOND CLASS YEAR

Summer Term

Broad professional naval officer training which emphasizes research and development, amphibious operations, and naval aviation in fleet operations. Each midshipman trains for and participates in an amphibious landing operation, observes aircraft carrier operations, receives research and development orientation, and makes training flights in various type aircraft.

First Term

C31. *Piloting and Meteorology.* Instruction in piloting, including aids to navigation, instruments, tides and currents, and charts and publications, supported by afloat piloting instruction and drill. Basic meteorology and its applications to naval operations. Solution of relative motion problems using the maneuvering board. *Three and one-half semester hours.*

Second Term

C32. *Leadership.* Classroom instruction in naval organization and administration with particular emphasis on shipboard aspects and the duties of watch officers aboard ship. *One and one-quarter semester hours.*

C34. *Navigation.* Celestial, electronic, and inertial navigation. Fundamentals of navigational astronomy with planetarium demonstrations. Visual and radar piloting and precise anchoring in afloat drills. *Four semester hours.*

FIRST CLASS YEAR

Summer Cruise

During his second cruise, the First Class midshipman becomes familiar with the duties of the junior officer by standing appropriate watches and discharging administrative responsibilities. He uses the

Watch Officer's Guide as a reference book. He does practical work in celestial navigation taking sights and determining the ship's position. He is introduced to the responsibilities of a ship's division officer by the division officers on board and by performing junior officer duties. He keeps a cruise journal which includes his work in seamanship, the Combat Information Center, communications, tactics, and navigation.

First Term

C41. *Leadership.* Classroom instruction in the principles of psychology, and the application of these principles to the practice of naval leadership. *Two and one-quarter semester hours.*

C43. *Operations.* Classroom instruction in tactics, seamanship, relative motion, rules of the nautical road, naval communications, and Combat Information Center procedures, all related naval operations developed by Operations Research techniques. Drills in shiphandling, tactics, Rules of the Road, seamanship, and communications. *Three and three-quarters semester hours.*

Second Term

C42. *Leadership.* Classroom instruction in military law and international law. *One and one-half semester hours.*

C44. *Operations.* Study by means of Operations Research principles, of the air, surface, and subsurface naval forces in complex naval operations including antisubmarine warfare, amphibious warfare, mine warfare, and striking force operations. A brief study of sea power in present day strategy. Drills in tactics and the Combat Information Center. *Four and one-half semester hours.*

ELECTIVE COURSES

C62. *Astronomy.* Principles and science of astronomy. Astronomical coordinate systems; solar system and galactic system motions; spectrographic analysis; and cosmogony. Prerequisite: M12. *Two semester hours.*

C63. *Oceanography.* A study of ocean basins, water masses, ocean currents, waves, tides, properties of sea water, and the collection and handling of scientific data at sea. Prerequisite: S12. *Three semester hours.*

C64. *Applied Oceanography.* The application of the principles of oceanography to naval problems of suboceanic detection and concealment. The effects of marine organisms and thermal gradients on sonar search. Prerequisite: C63. *Three semester hours.*

C81. *General Psychology.* The study of normal human behavior, including motivation, emotion, the self; physiological factors of perception, thinking, and learning; evaluation of performance and ability; measurement and individual differences. Prerequisites: C41. *Two semester hours.*

C82. *The Law of the Nautical Road.* An advanced study of the rules for the prevention of collision at sea and an analysis of court decisions involving marine casualties. Prerequisite: C43. *Two semester hours.*

C83. *International Law.* A study of the development of the rights and duties of states, and the procedures employed by states in protecting these rights and in performing these duties. Particular emphasis is placed on the legal status of war and the rights of neutrals and belligerents, international claims, pacific settlement of disputes, treaties, and international organizations. Prerequisites: H22, H32, C42. *Two semester hours.*

C85. *Advanced Navigation.* Specialized navigation theory and techniques. The Sailings; chart and grid design; magnetic compass adjustment; polar navigation; lifeboat navigation; Ships Inertial Navigation System. An extended problem covering voyage planning and transit. Prerequisite: C34. *Three semester hours.*

C86. *Space Flight.* Basic introduction to space flight problems. Brief history of astronautics; basic theory of rocket propulsion and propellants; discussion of satellites and space stations; problems of escape from earth, solar system, interstellar flight; human factors in space flight; communications in space; some concepts for future space flight. Prerequisite: Basic curriculum through second class year. (This course combines small parts of E42, S41, W42, W71, S21, S22, C62, and Y41 with additional material into an overall specialized treatment of the course subject). *Two semester hours.*

Taking a bearing. **YP Drill.**

NAVAL HYGIENE DEPARTMENT

Head of Department: Captain Walter Welham (MC), U.S. Navy

The objective of the department is to instruct each midshipman so that he may appreciate the value and necessity of personal hygiene, and realize his command responsibility for the promotion and maintenance of physical and mental health.

Description of Courses

FOURTH CLASS YEAR

Summer

Y10. *Fundamentals of Hygiene.* The midshipman is introduced briefly to the fundamentals of personal hygiene, including mental and physical hygiene and first aid.

FIRST CLASS YEAR

First Term

Y41. *Naval Hygiene.* Instruction covering the human body as a functioning machine, the care of the human machine, and the effect of the various military environments. *Three-quarters semester hour.*

WEAPONS DEPARTMENT

Head of Department: Capt. Stoughton Sterling, Jr., U.S. Navy

Executive Officer: Comdr. Robert M. McConnell, Jr., U.S. Navy

The objective of the Department is to provide midshipmen with the requisite professional education for performance of duty in the weapons field. Midshipmen receive classroom instruction in the principles of naval weapons and the systems that control them.

The classroom instruction is supported by practical instruction using equipment available to the Department. The practical instruction stresses the application of principles learned in the classroom, and understanding of weapons doctrine, control and alignment.

Description of Courses

FOURTH CLASS YEAR

Summer

W10. *Small Arms.* Practical instruction in nomenclature, field stripping, and assembly of small arms. Firing of service rifle, carbine, and pistol. Those who qualify are awarded the U.S. Navy Expert Rifleman medal and the U.S. Navy Expert Pistol Shot medal.

THIRD CLASS YEAR

Summer Cruise

Instruction in safety precautions and ammunition handling. Midshipmen drill at General Quarters stations and man gun batteries and control stations for target firing exercises.

SECOND CLASS YEAR

First and Second Terms

W31. *Weapon Components.* Principles of explosive ordnance, guns and mounts, automatic control equipment including servos and synchros, exterior ballistics and basic mechanical analogs. *Two semester hours.*

W32. *Gun Fire Control Systems.* The mathematical solution of the linear rate anti-air fire control problem, principles of fire control system stabilization, system applications of basic mechanical analogs, the relative rate anti-air fire control problem, basic electrical analogs, rate gyros and their applications in relative rate fire control systems, and principles of pulsed radar. Practical instruction in weapon control procedures, including the operation of Directors, Radars, Computers, Target Designation Equipment and Mounts. *Two and one-quarter semester hours.*

FIRST CLASS YEAR

Summer Cruise

During the summer cruise, midshipmen of the First Class use their knowledge of weapon systems to control and fire gun and guided missile batteries. They receive practical instruction in weapons control systems, target threat evaluation equipment, safety precautions, and the duties of a gunnery watch and division officer.

First Term

W41. *Missile Systems.* Principles of non-pulsed radar, guided missiles, ballistic missiles and their system applications. Practical instruction in guided missile control procedures, weapon direction equipment techniques, weapon system alignment procedures, and orientation on selected guided missiles. *Two and one-half semester hours.*

Second Term

W42. *Underwater Systems.* Principles of digital computers, special weapons effects, anti-submarine warfare and system applications, and general orientation on mines, submarine, and aircraft weapon systems. Practical instruction in anti-submarine warfare and naval gunfire support doctrine and procedures. *Two and three-quarter semester hours.*

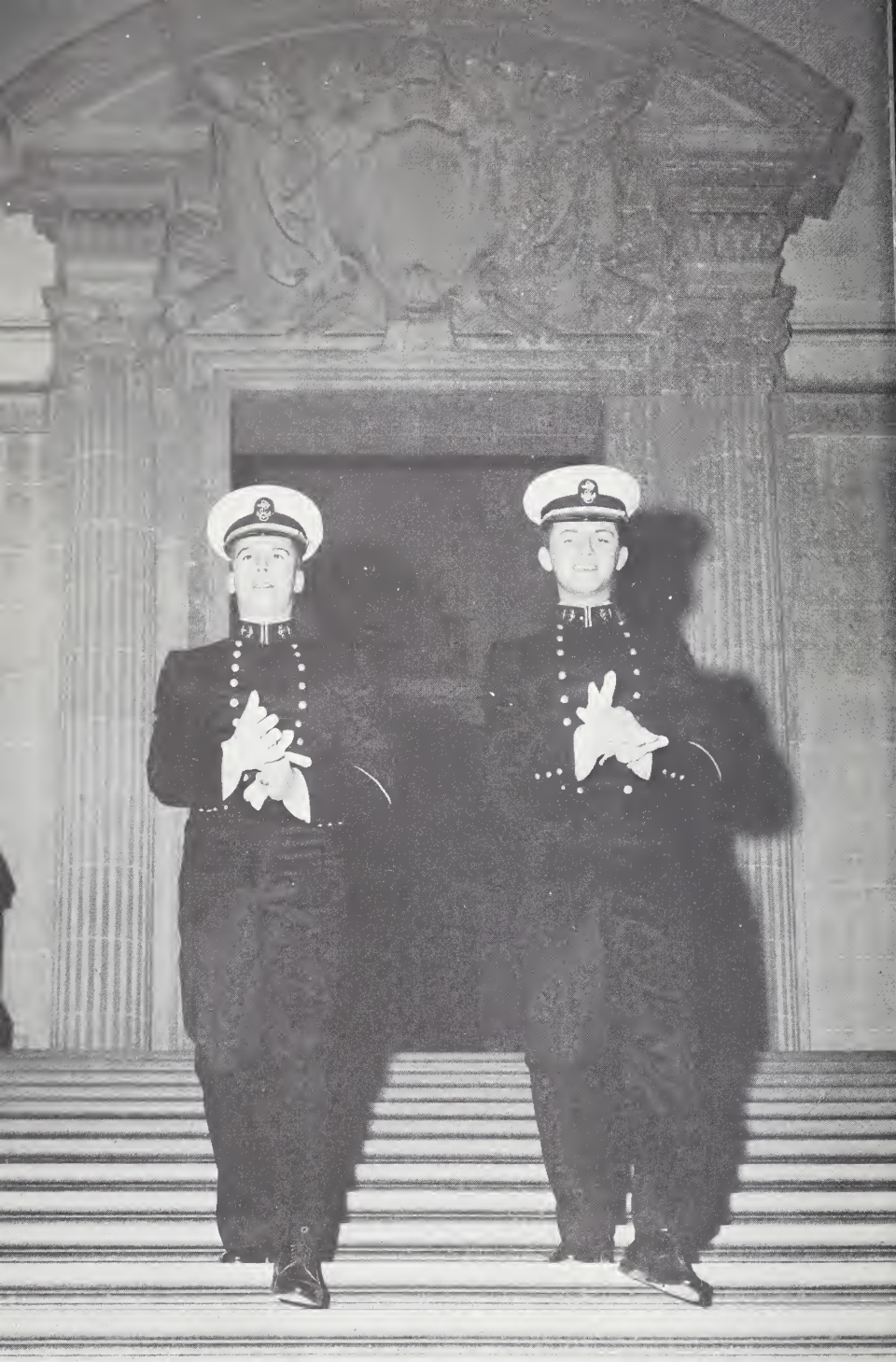
ELECTIVE COURSES

W71. *Trajectory Mechanics.* A study of trajectory theory and other considerations for satellites, ballistic missiles, guided missiles, and projectiles. Prerequisites: Basic curriculum through Third Class Year. *Three semester hours.*

W72. *Digital Computers.* Study of the mathematical basis for digital computers and some computer techniques. Prerequisites: Basic curriculum through Third Class Year. *Three semester hours.*

W81. *Analog Computers.* Study of analog computers using mechanical, electrical, and electronic simulators. Prerequisites: Basic curriculum through Second Class Year. *Three semester hours.*

W82. *Servo Mechanisms.* A study of servo mechanisms including various classifications, stability considerations, and applications of magnetic, electronic, electrical, mechanical, and hydraulic techniques. Prerequisites: Basic curriculum through Second Class Year. *Three semester hours.*



Bancroft Hall activities are under the cognizance of the Commandant.

The Commandant of Midshipmen

Commandant: Capt. James H. Mini, U.S. Navy
Executive Officer, Bancroft Hall: Capt. Julian T. Burke, U.S. Navy

The Commandant of Midshipmen has cognizance over training and education conducted in the Executive and Physical Education Departments. He serves as Head of the Executive Department, with the Executive Officer of Bancroft Hall as his principal assistant. Under the direction of the Commandant, the Head of the Physical Education Department supervises physical education drills and the intramural sports program.

EXECUTIVE DEPARTMENT

The Executive Department prepares the midshipmen for the exercise of command. The specific objectives of the Executive Department are: (a) To develop character and guide the development of proper military and personal habits; (b) to inculcate discipline and to foster the subordination of self to a common cause; (c) to develop in each midshipman an appreciation and knowledge of and motivation for his future role as a naval officer through personal example and practical application of the psychological principles of human behavior and the principles and techniques of leadership.

The officers of the Executive Department work and live in close contact with the midshipmen, enabling them to further the development of personal and military character through precept and example, counsel and guidance, and, when required, corrective or disciplinary action.

FOURTH CLASS YEAR

Summer Term

X10. *Orientation and Indoctrination.* An elementary course to orient the new midshipman in the Naval Service and to indoctrinate him with the way of life at the Naval Academy, its mission, ideals, standards, traditions, customs, and the duties required of him.

First and Second Terms

X11, X12. Infantry drills, watch standing, and continued indoctrination. *One semester hour.*

THIRD CLASS YEAR

First and Second Terms

X21, X22. Infantry drills, watch standing, elementary military responsibilities. *One semester hour.*

SECOND CLASS YEAR

First and Second Terms

X31, X32. Infantry drills, watch standing, increased military responsibilities. *One semester hour.*

Second Term

Personal Finance. A noncredit study of the principles of insurance, benefits available from the government to the survivors of military personnel, personal insurance programs and investments, and personal financial planning. Course includes budget planning for the junior officer. A review lesson is assigned during the First Class Year.

FIRST CLASS YEAR

First and Second Terms

X41, X42. Infantry drills, watch standing, and performance of specific responsible duties in the Brigade Organization involving the exercise of leadership and command. *One semester hour.*

PHYSICAL EDUCATION DEPARTMENT

Head of Department: Captain Asbury Coward, U.S. Navy
Executive Officer: Comdr. Wesley R. Gebert, Jr., U.S. Navy

Each midshipman's skill, strength, endurance, agility, and competitive spirit are developed in order that he may be capable of surmounting severe physical hardships, be proficient in training and instructing others, and acquire useful habits of physical fitness.

Throughout the entire 4 years each midshipman is required to participate in a comprehensive and extensive program of intramural and intercollegiate sports. The objective of the program is to develop competitive spirit, confidence, and teamwork.

Description of Courses

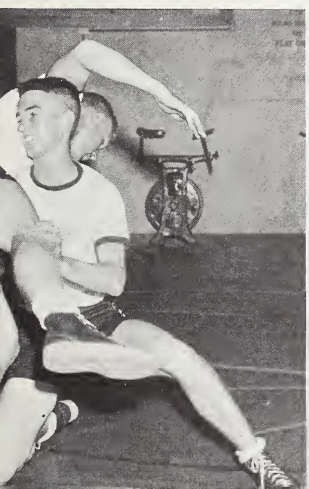
FOURTH CLASS YEAR

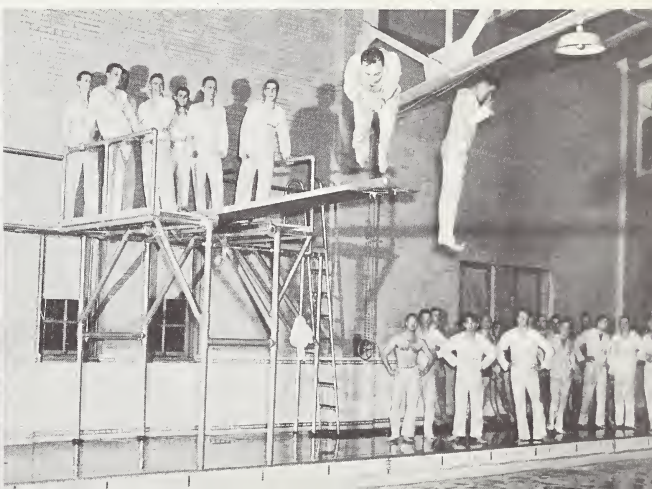
Summer

T10. *Physical Education Orientation and Indoctrination.* Preliminary examinations in swimming, posture, and athletic ability. Testing in Physical Achievement with subsequent preparation of class grouping. Physical education drills in fundamentals of swimming, boxing, and wrestling. Indoctrination drills in lacrosse, fencing, soccer, gymnastics, crew, golf, tennis, squash racquets, volleyball, and track.

First and Second Terms

T11 and T12. *Physical Education.* Fundamentals of badminton, soccer, swimming, boxing, wrestling, gymnastics, golf, tennis, posture, volleyball, basketball, handball, bowling, and squash racquets. Tests in applied strength, agility, swimming, boxing, wrestling, and gymnastics. *Two semester hours.*





THIRD CLASS YEAR

T21 and T22. *Physical Education.* Continuation of instruction in swimming, boxing, wrestling, personal conditioning, tennis, golf and gymnastics, and tests in applied strength, agility, swimming, boxing, and wrestling. *One semester hour.*

SECOND CLASS YEAR

T31 and T32. *Physical Education.* Advanced instruction in swimming, boxing, tennis, golf, handball, officiating, posture, and principles of personal conditioning, hand-to-hand combat, and volleyball. Tests in applied strength, agility, swimming, and boxing. *One and one-quarter semester hours.*

FIRST CLASS YEAR

T41 and T42. *Physical Education.* Instruction in advanced swimming, hand-to-hand combat, personal conditioning, tennis, golf, badminton, and athletic administration. Tests in measurement activities. *Three-quarters semester hour.*

THE LIBRARY

Mission. The Naval Academy Library is the principal reference and research organization for the Severn River Naval Command, organized under a professional librarian and library staff to provide books, documents, and information to aid the naval service. Its primary responsibility is to the Superintendent, the officers and civilian faculty, and the midshipmen, but it also performs important service for the officers stationed throughout the Command. As occasion may demand, it extends its assistance farther afield to individuals throughout the country and even to foreign institutions.

To render these services it has assembled the largest collection of naval books, documents, and periodicals in the United States. The guiding aim is to procure the latest authoritative material in all major fields of knowledge.

Location and holdings. The library is housed in large reading and stack rooms in Mahan and Maury Halls. The collection comprises about 150,600 volumes, with many popular, technical, and naval magazines. The collection of naval histories and of naval biographies, of works on the development of various types of ships, of seamanship, navigation, aeronautics, ordnance, and gunnery is especially strong. It is well-developed in history, biography, international law and relations, travel, and in reference works, with other subjects in less degree. In addition, a collection of the best current fiction is maintained for recreational reading. The books and periodicals are arranged on open shelves providing convenient access.

Bulletin boards in the library announce the new books. Further, to show what the library has to offer and to promote its use and service, a mimeographed bulletin is issued once a week, containing the titles of 35 to 40 of the latest books acquired, and giving beneath each title a brief annotation describing its outstanding features. Often these bulletins are made up in part from the titles of articles contained in the publications of naval, military, or engineering societies, and at other times of those of naval interest appearing in the general periodicals. The bulletin is made available to all officers, professors, and midshipmen.

Use of the library is extensive with the number of books circulated in 1957–58 amounting to 49,093 volumes and with the reference and research work being carried on in response to 8,762 requests for information. All midshipmen are required during their first summer to spend 2 hours a week under the direction of the library staff for instruction in the use of the various periodical indexes, reference books, and other library tools. The purpose is to acquaint midshipmen with the location of the books, to teach the use of the catalog, and the best ways to look up topics on which information is sought.

The library provides officers, instructors, and midshipmen not only with facilities for advancing their professional training, but it also offers opportunities for cultural and recreational reading.

Brigade libraries. In addition to the main library, two small libraries are maintained in Bancroft Hall. These collections enable midshipmen to have ready access to reference books, naval histories, and light reading, during hours when it is not possible to visit the main library. These libraries in 1957–58 circulated 5,676 volumes. In 1961 the two libraries, combined and augmented, will occupy the Brigade Library, which is now under construction between the two new wings being added to Bancroft Hall. Ample, well-lighted, air-conditioned space is being provided and a collection of about 15,000 selected books and professional periodicals is planned. The Brigade Library will provide the benefits of a superior library collection located in the Midshipman residence area.

Departmental libraries. Each of the departments of instruction maintains a departmental library of works related to its particular field for use of the instructional staff. These are listed in the catalog of the main library.

TRAINING UNDER SAIL

Training under sail at the Academy is for the purpose of developing team discipline, leadership, and appreciation of the sea and ships. It is carried on in some of the finest and best-known boats in racing circles.

The Academy's 62-foot cutter *Highland Light* was holder of the record in the Newport-Bermuda ocean racing classic for 22 years, and the 71-foot yawl *Royono* was first to cross the line in the 1952 race. The sailing fleet ranges from the 88-foot schooner *Freedom*, the 50-foot yawls *Windfall II* and *Gypsy*, and twelve 44-foot yawls, to 14-foot dinghies. Thirty 26-foot knockabouts comprise the primary training craft. Thirty Gannet dinghies are used for advanced training and intercollegiate competition.

Competitive experience is gained during the school year with the larger boats on the Chesapeake Bay in open competition, and in intercollegiate and intramural contests with the smaller crafts. The Naval Academy varsity dinghy sailing team is among the best in the East. During the summer the larger boats are sailed in the Bermuda and Annapolis-Newport ocean races.

Sail training beyond the primary stages is voluntary. All midshipmen are given about 2 hours training in knockabouts and dinghies and 4 hours in yawls. About one-quarter of the Brigade participates beyond primary training, in competitive and recreational sailing. The Naval Academy Sailing Squadron is the link between the sailing program and civilian sailing organizations.

Secretary of Defense
Thomas S. Gates, Jr.

Adm. Arleigh A. Burke,
USN, CNOL.

THE EVENING LECTURE PROGRAM

The principal lecture series conducted at the Naval Academy is that given to the First Class Midshipmen. The educational methods employed at the Naval Academy in general demand of the student a high order of concentration and intense application and are characterized by sharp focus in the presentation of subject matter. Therefore, it is particularly appropriate during the First Class year to provide an overview of challenging problems in the areas of command and administration, and of concepts of broad intellectual implication. The First Class lecture series endeavors to do this by securing speakers who are outstanding in their field, and of wide experience and understanding, whose contribution to the midshipman's perspective will be of lasting value. During the first term the lecture series emphasized matters of professional naval interest, and during the second term is devoted largely to subjects in the liberal arts.

During Academic Year 1959–60, the First Class Lecture Program was as follows:

29 Sept.	Vice Admiral H. P. Smith, USN, Chief of Naval Personnel.
6 Oct.	Admiral Arleigh A. Burke, USN, Chief of Naval Operations, on the subject of leadership.
15 Oct.	The Honorable Thomas S. Gates, Jr., Secretary of the Navy.
20 Oct.	Vice Admiral Stuart H. Ingersoll, USN, President of the U.S. Naval War College, on the subject, "The Far East."
27 Oct.	Admiral Charles R. Brown, USN, Commander in Chief, Allied Forces, Southern Europe.

Vice Adm. Robert B. Pirie, USN.

Gen. Alfred M. Gruenther, USA.

29 Oct.	Commander William R. Anderson, USN, Commanding Officer, U.S.S. *Nautilus* (SSN–571) on the subject of the Polar crossing of the *Nautilus*.
3 Nov.	Vice Admiral Robert B. Pirie, USN, Deputy Chief of Naval Operations (Air).
17 Nov.	Admiral Jerauld Wright, USN, Commander in Chief Atlantic and Supreme Allied Commander Atlantic.
8 Dec.	General Randolph McCall Pate, USMC, Commandant of the Marine Corps, on the subject, "The Role of the Marine Corps in National Defense."
26 Jan.	Vice Admiral Wallace M. Beakley, USN, Deputy Chief of Naval Operations (Fleet Operations and Readiness), on the subject, "The United States Navy in the Far East."
3 Feb.	Rear Admiral William F. Raborn, USN, Special Projects Officer, Office of the Secretary of the Navy, on the subject, "The Fleet Ballistics Missile System."
12 Feb.	Mr. Edwin M. Wright, of the Department of State, on the subject, "The Middle East."
18 Feb.	The Honorable Harold R. Medina, United States Circuit Court Judge, Court of Appeals on the subject, "The Value of a Liberal Education."
3 Mar.	Brigadier General Victor H. Krulak, USMC, Director, Marine Corps Education Center, Marine Corps Schools, Quantico, Virginia, on the subject, "The Inchon Landing."
25 Mar.	Mr. James C. Hagerty, Press Secretary to the President of the United States.
31 Mar.	Dr. Robert G. Albion, Professor of Oceanic History and Affairs at Harvard University, on the subject, "Our New World Responsibilities."
9 Apr.	Dr. David McCord, poet in residence at Harvard University, on the subject of poetry and light verse.
15 Apr.	General Alfred M. Gruenther, USA (Ret.), President, The American Red Cross, on the subject, "Major World Problems."
24 Apr.	Rear Admiral George J. Dufek, USN (Ret.) on the subject "The Antarctic and Operation Deepfreeze."

PRIZES AND DISTINCTIONS

Each year more than 50 prizes and awards are presented to midshipmen for outstanding accomplishments in academic work, for marked proficiency in professional departments, or for excelling in contests of knowledge about such matters as world history of the present day, and in debate and public speaking.

Prizes normally consist of dress swords, watches, cameras, and binoculars, ranging in value from $50 to $150, and there are medals and other eagerly sought forms of reward for outstanding achievements. In some cases the prize or award is specified by the donor but in many the choice of a prize, within certain limitations, is left with the recipient.

These prizes and awards are provided by national patriotic organizations and societies, by former Naval Academy classes, by or in behalf of outstanding leaders in military and civilian life, as memorials to deceased graduates, and by organizations recognized widely in some field of activity or endeavor with a direct or indirect naval association or affiliation.

One of the more noteworthy distinctions which can befall a member of each graduating class is to be a recipient of a letter of commendation from the Superintendent. In 1959, 29 midshipmen received this high honor for having demonstrated outstanding officerlike qualities and for having contributed most by precept and example to the development of those qualities within the Brigade of Midshipmen.

Appropriate awards also afford recognition to those who excel in athletics and who participate in the many extracurricular activities which help to broaden and enrich the lives of the members of the Brigade of Midshipmen.

Awarding the Westcott Memorial prize.

Macdonough Hall From 3d Wing.

ATHLETICS

Bill the Goat leads the way.

Athletics at the Naval Academy

Athletics are an important part of the overall training program at the Academy. The physical facilities for these activities are among the finest to be found anywhere. Nearly every intercollegiate sport is represented by varsity teams. Junior varsity and intramural sports programs are available for midshipmen throughout the year.

The emphasis is on competitive athletics, and a great portion of the program is devoted to contact sports. Through expert instruction, midshipmen are taught the fundamental of sports as participants, coaches, and officials.

Intercollegiate Athletics

Naval Academy teams meet the finest opposition in intercollegiate athletics, playing representative colleges and universities from all parts of the country.

Among the sports included in this extensive competition are: football, baseball, basketball, lacrosse, crew, soccer, cross country, fencing, track, swimming, wrestling, gymnastics, golf, tennis, rifle, pistol, dinghy, sailing, and squash.

Tecumseh gets war paint.

Bill gets the brush.

Pep Rally Tecumseh Court

Football

Navy football teams have all the tradition and color of the Service they represent. Though the yearly schedule lists many of the big names in college football, the major game of the season is the traditional battle with the United States Military Academy. This annual contest between two of the service academies ranks high among the Nation's outstanding sports events. Navy football boasts varsity, junior varsity, plebe, and 150-pound teams, as well as six battalion teams. On whatever level of participation a midshipman chooses, he is assured of expert coaching and ample opportunity for competitive play.

Basketball

Navy basketball teams, in addition to meeting the best in collegiate competition during the regular season, have accepted invitations to major post-season tournaments.

Crew

Navy crews over the years have had remarkable records of success. Their recent achievements include winning the 1952 Olympic rowing championship, completing the 1953 and 1954 seasons undefeated, climaxing their triumphs in those years with victories over ten other crews in the Intercollegiate Rowing Association Regatta, and establishing the longest unbroken winning streak in collegiate rowing history.

Fencing

Navy fencing teams have frequently captured the National Intercollegiate Championship. Navy baseball, under expert coaching, is played on excellent diamonds.

Navy coaching staff.

FOOTBALL is one of the main sports at the Naval Academy. Navy's varsity squad ranks with the top football teams in the country. The Naval Academy also boasts the 150-pound Eastern Intercollegiate Football Champions 1959–60.

The Navy-Marine Corps Memorial Stadium, dedicated to "those who have served and will serve, upholders of traditions and renown of the Navy and Marine Corps of the United States. May it be a perpetual reminder of the Navy and Marine Corps as organizations trained to work hard, play hard—in war defenders of freedom, in peace, molders of our youth."

Memorial Stadium.

A West Point Alumnus watches 150-pound football game.

Navy's soccer squad starts a drive down the field.

CROSS-COUNTRY competition at the Naval Academy teaches the Midshipmen the value of conditioning and stamina. From the new Plebe to the upper classmen—cross country offers a challenge to all.

On a starboard tack before the gun.

Sailing at the Naval Academy is a must for midshipmen. Competition in sailing events in the dinghys give the midshipmen an excellent background for bigger events. During 1959 they won the Service Academy Regatta, plus the Mid-Atlantic Interscholastic Sailing Association Trophy.

Preparing for the race

Formal dinner at Superintendent's house for coaches, players and their ladies (below).

Indoor track.

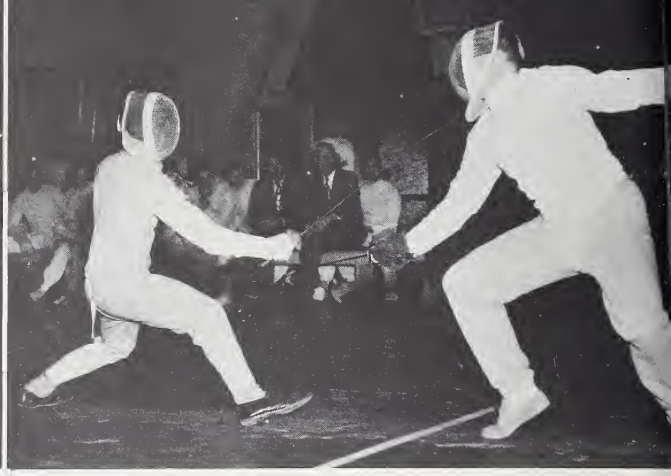
Winter Sports

The Academy's huge fieldhouse houses one of the best indoor tracks. This affords the midshipmen the opportunity to compete in track events year round.

All midshipmen receive wrestling instruction as part of their personal defense phase of training. Competition in college events and brigade wrestling events give them ample opportunity to test their newly acquired skills.

Navy's basketball teams have always held a high ranking in the college competitions on the East coast. In the 1959 season Navy won a place in the NCAA tournament.

Big Weekend. The climax of each of the three sport seasons is reached when the Naval Academy teams meet the Military Academy. These contests frequently upset the predictions of the experts and always result in hard-fought games creditable to the participants on both sides.

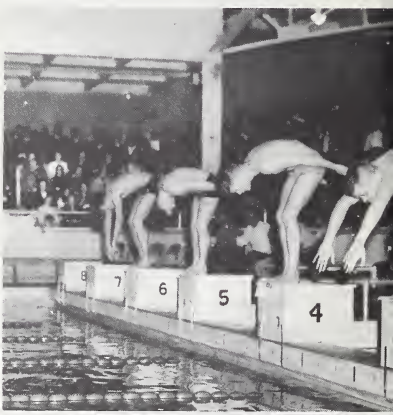


Fencing

Navy's fencing team is classed as one of the best college teams in the country.

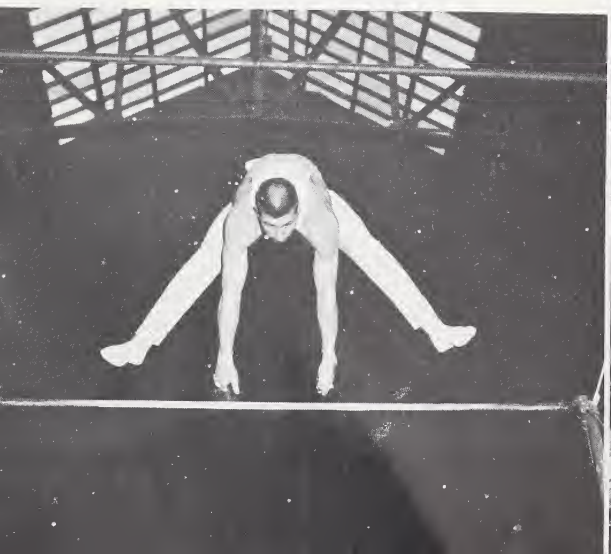
Swimming

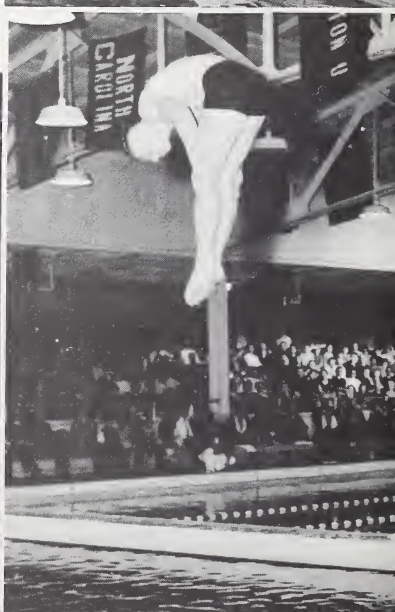
The Academy boasts one of the best natatoriums in the country. Here the midshipmen not only learn to swim, but compete in swimming events with other schools.



Gymnastics

Gymnastics, one of the top conditioners, is prominent at the Academy.





Navy Sharpshooters.

Rifle and Pistol.

Navy's pistol team shooting seems to come natural to midshipmen.

Squash Rackets.

Navy's squash team is tops in the college circuit.

Varsity crew.

Track

The track season at the Naval Academy includes the entire year. Beginning with the out-of-season track in the fall, the trackman goes to indoor track in the winter, and finally the important spring season. Thompson Field is the scene of fall and spring workouts, and the new Field House houses indoor track facilities.

Baseball

The baseball squad is rated among the best in the East. Competing in the Ivy League, the varsity team has had many successful seasons, including the league championship in 1954. Just before June Week (graduation time) the season closes with the colorful and traditional game between Army and Navy.

Golf

Golf was started at the Naval Academy in 1908, but was not made a varsity sport until 1934. Navy has defeated Army 14 times while losing only 4. In 1950 and 1957 Navy won the Eastern Intercollegiate Championship. The coach, Bob Williams, has been an instructor since 1928, and the varsity coach since its origin.

Tennis

Tennis is one of the few sports which can be played extensively after graduation. The Naval Academy tennis facilities are outstanding. The varsity has six Har-Tru courts located next to Ward Hall. Between Stribling Walk and Dewey Field, there are 24 more courts for general use. Navy's net teams are ranked in the top of the eastern college teams.

Lacrosse

Lacrosse is the oldest native American game. It was originated by the Indians, and next to war, was their major interest. The site of this rugged sport at the Naval Academy is Thompson Stadium, and many a spring afternoon crowd is there witnessing Navy's team in action. Six national championships have been won by Navy since 1926, when they entered the U.S. Intercollegiate Lacrosse Association. The team is coached by Willis Bilderback who has just completed his second year as Head Coach.

Track.

INTRAMURALS

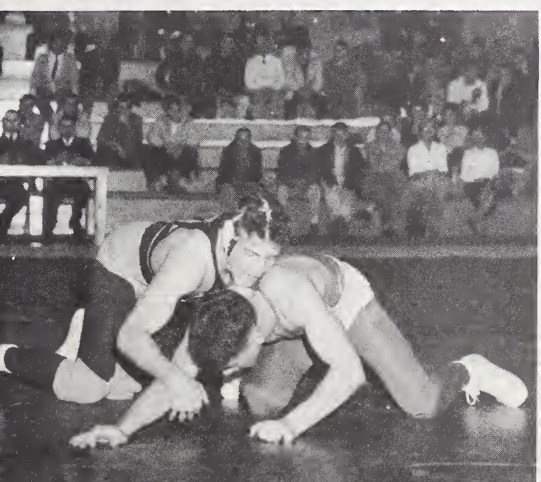
Intramural Sports Program. The sports program of the Department of Physical Education includes competition for the midshipmen in 24 different sports. All midshipmen not on organized teams are required to take part in the intramural sports program. In this way, the midshipmen may compete with others possessing similar athletic ability, while utilizing a fine opportunity for physical development and recreation.

The list of intramural sports includes: basketball, bowling, boxing, crew, cross country, fencing, fieldball, football, golf, gymnastics, handball, lacrosse, pistol, sailing, soccer, softball, squash, steeplechase, swimming, table tennis, tennis, touch football, track, volleyball, water polo, and wrestling.

Gymnastics.

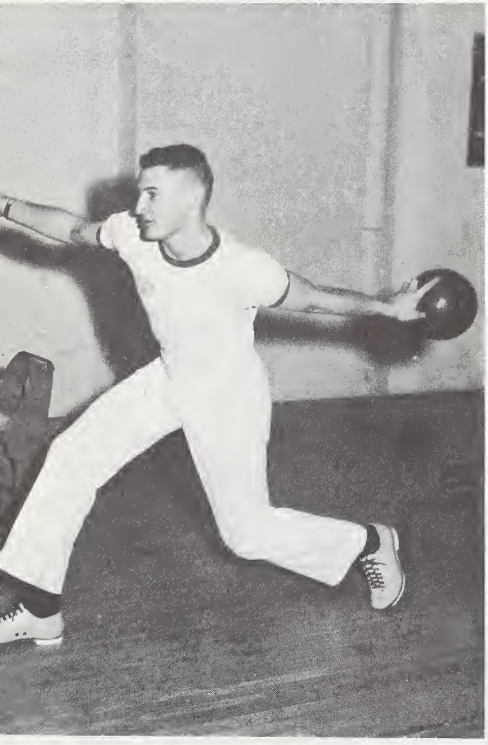
Volley Ball.

Wrestling.



Handball.

Basketball.



Bowling.

Boxing.

Cheerleaders.

Extracurricular Activities

Many extracurricular activities go on within the confines of Bancroft Hall. These activities are both many and varied and serve a multitude of purposes, both to the Naval Academy and the midshipmen.

. . . each day from the last class to evening meal formation the corners of the Hall are beehives of activity, ranging from Art to Politics and from Chess to Gunclubs.

The Brigade Executive Committee, composed of the Brigade Commander, the upperclass presidents, the First Class Secretary, and 6 battalion representatives, is responsible for the administration of the 3,600-man Brigade of Midshipmen.

Fan of Tridents.

PUBLICATIONS

Trident

Trident magazine was conceived for those midshipmen with literary and artistic tastes.

Lucky Bag

A committee is chosen to put out the class yearbook *Lucky Bag* which covers the entire four years at the Naval Academy and usually numbers well over 700 pages.

Log and Splinter

Two other publications, the *Log* and *Splinter* are published bimonthly by separate staffs.

Art and Printing Club

The Art and Printing Club provides an outlet for those with the right talent. The Club is especially busy during the football season when the "BEAT ARMY" slogans are so prevalent on the Academy grounds.

The Photo Club

The Photo Club is the delight of all amateur photographers in the Brigade of Midshipmen. Aside from the excellent facilities they have access to, they have the satisfaction of seeing much of their work published in the various magazines which the Academy publishes.

Radio Station

Members of the Academy's own radio Station WRNV "Radio Navy" provides music, broadcasts of Navy athletic events, and the news for the benefit of the Brigade.

Model Club

The Model Club offers a wide variety for those with varying interest in automobiles, planes or trains.

Foreign Languages Club

The Foreign Languages Club stimulates a growing interest in enabling midshipmen to speak a foreign language fluently.

Chess Club

Members of the Academy's Chess Club which is a going organization. One of the highlights of the year is the interbrigade competition for the Ditmar Cup.

Radio Club

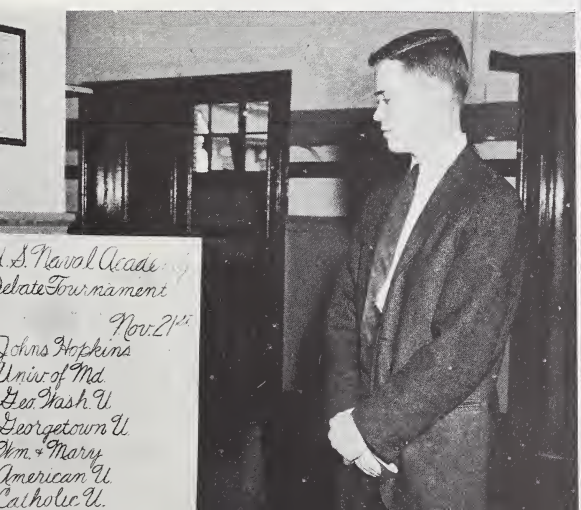
Amateur radio bugs are in their glory with the fine facilities offered at the Academy.

Gun Club

The Gun Club is one of the newer organizations at the Naval Academy. It also claims one of the largest followings in Bancroft Hall.

Forensics

Debaters of the Naval Academy Forensic Society generate much goodwill for the Naval Academy during their travels to various colleges and universities for their debate sessions. The Academy team vies for honors in the Intercollegiate debates each year.



The Midshipmen's combo, the "NA–10," plays at many of the dances and activities as an extracurricular activity.

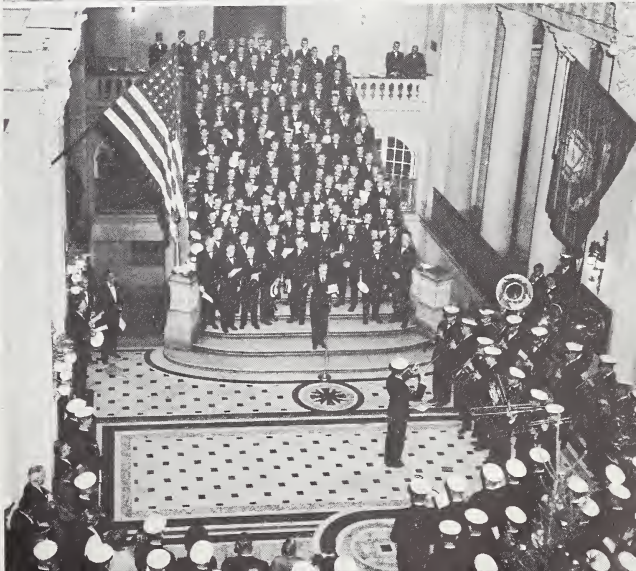
Engineering Club

Ship stability and nuclear accelerators are just a few subjects found in the Combined Engineering Club's program. Through lectures and field trips the members are able to stay abreast of current scientific developments.

The Chapel Choir.

The Drum and
Bugle Corps.

Combined
musical show.



The Glee Club
sings
Christmas Carols.

The Chapel.

How To Become a Midshipman at the Naval Academy

Each candidate for admission to the Naval Academy must:

1. Meet general eligibility requirements.
2. Obtain a nomination.
3. Qualify scholastically (academically).
4. Qualify physically.

GENERAL ELIGIBILITY REQUIREMENTS

Citizenship

All candidates for admission to the United States Naval Academy must be citizens of the United States, except as provided by law for limited numbers of citizens of other American Republics, Canada, and the Philippine Republic. An alien can be admitted as a midshipman only by an Act of Congress.

Age

Age limits are established by law. Candidates must be between 17 and 22 years of age. Each candidate must have reached his 17th birthday but not his 22d birthday on or before 1 July of the year in which admission is desired to be eligible for admission.

Character

Candidates must be of good moral character. This prerequisite is usually passed upon by the Member of Congress making the nomina-

tion. The Secretary of the Navy may, however, decline to accept the nomination of any candidate in the event conclusive evidence of unsuitable character is submitted. For other sources of appointments, investigation of character qualifications rests jointly with those authorized by law to sponsor such nominations and the Navy Department.

Marital Status

No person who is married, or who has been married, is eligible for admission to the Naval Academy, regardless of his other qualifications. Midshipmen may not marry, and any midshipman found to be or have been married will be discharged.

OBTAINING A NOMINATION

There are several ways of obtaining a nomination for admission to the Naval Academy. The variety of types of nominations is intended to make it possible for young men from all over the United States to compete for appointments as midshipmen. In the following paragraphs, prospective candidates may learn what appointments they may be eligible for, and how to apply for a nomination for each. In some cases, candidates will find that they are eligible for more than one type of nomination. In such cases, it will usually be to their advantage to apply for more than one nomination.

Presidential Appointments

Presidential appointments are available to sons of officers and enlisted men of the regular Army, Navy, Marine Corps, Air Force, and Coast Guard. To make application for appointment from this source, the candidate or his parent should address a letter to the Chief of Naval Personnel, Navy Department, Washington 25, D.C., clearly indicating the Service connection of the parent and giving the son's full name and date of birth. The letter of application should also designate the year in which admission to the Naval Academy is desired. Letters of application should be forwarded any time after July 1 of the year preceding that in which admission is desired, but not later than February 1 of the admission year. Candidacy must be established in time to participate in the March entrance examination. Only the Chief of Naval Personnel may issue authority to take the necessary College Board tests as a candidate for appointment to the Naval Academy.

Seventy-five candidates may be appointed annually from this source. In the event of vacancies in the annual quotas of appointments authorized from the Navy and Marine Corps and the Naval and Marine Corps Reserves, qualified Presidential nominees in excess of the normal Presidential quota may be admitted to fill such vacancies.

Congressional Appointments

The Vice President of the United States, each United States Senator, each Representative in Congress, and the Resident Commissioner of Puerto Rico may have five appointees at the Naval Academy at any one time. The Vice President makes his nominations from the United States at large. The United States Senators must make their nominations from among residents of their respective States, and the Members of the House of Representatives must make their nominations from among residents of the congressional districts which they represent.

Members of Congress are authorized to nominate a maximum of six candidates for each vacancy. The Candidates so nominated are usually designated as the principal and the first, second, third, fourth, and fifth alternates. Members of Congress may designate their nominees as competitive alternates and leave to the Academic Board at the Naval Academy the designation of the principal and the arrangement of the alternates based upon order of merit.

Application for nomination should be made directly to the Vice President, Senator or Representative. It is in order for a candidate to include in his letter of application for a nomination such items as favorable endorsements by school officials and others. Application should be made at least a full year in advance of the year in which the candidate hopes to enter as a midshipman, because some Members of Congress require candidates to compete for nominations by taking a special examination for that purpose. Such examinations are usually held in July or November, and they are not to be confused with, or considered a substitute for, the March administration of College Entrance Examination Board tests required by the Naval Academy.

Appointments from the Regular Navy or Regular Marine Corps

These appointments are available to enlisted men on active duty in the regular Navy or Marine Corps. The candidates must have enlisted on or before July 1 of the year preceding that in which admission to the Naval Academy is desired. Any enlisted man desiring a nomination for appointment to the Naval Academy should make this known to his commanding officer early, and if successful in passing the required preliminary physical and scholastic examinations, the candidate is transferred to a preparatory school maintained by the Department of the Navy at the U.S. Naval Training Center, Bainbridge, Md. At Bainbridge he will improve his preparation for the Naval Academy's entrance examinations and course of study. This method of admission provides a splendid opportunity for enlisted personnel of the Naval Service.

One hundred and sixty candidates may be appointed annually from this source. Qualified candidates of the regular Navy and Marine Corps in excess of this quota may be appointed to fill vacancies in annual quotas of the President and of the Naval and Marine Corps Reserves.

Appointments From the Naval Reserve or Marine Corps Reserve

Such appointments are open to enlisted men of the Naval and Marine Corps Reserves. Applicants must have had at least 1 year in the Reserve by July 1 of the year of admission to the Naval Academy, and must have attended a minimum of 26 regular drills between July 1 and the date of the March administration of the College Entrance Examination Board's tests. Active service may be accepted in lieu of drills, 1 full week of active service being the equivalent of one drill.

Enlisted men, whether on active or inactive duty, should make known to the commanding officers of their respective units their desire to become candidates for admission to the Naval Academy. Application should be submitted prior to October 1 to the applicant's commanding officer for further processing. Enlisted candidates from the Reserves on inactive duty are not eligible for assignment to the U.S. Naval Preparatory School at Bainbridge.

One hundred and sixty candidates may be appointed annually from this source. Vacancies in the annual quotas allowed the President and the Navy and Marine Corps may be filled by qualified Naval and Marine Corps Reserve nominees who are in excess of the quota authorized the Reserve.

Appointment From Honor Military and Naval Schools

An honor graduate or a prospective honor graduate of a designated honor military or naval school should apply to the principal of his school for nomination as a candidate for admission to the Naval Academy. Each designated honor military or naval school may nominate three honor graduates or prospective honor graduates each year to compete among themselves for 10 vacancies for midshipman. The details of submitting nominations are handled by the school concerned and the Chief of Naval Personnel, Navy Department, Washington 25, D.C.

Appointment From NROTC Units

Only contract students in the Naval Reserve Officers Training Corps units at the various colleges and universities are eligible to apply for appointments from this source. Contract students should apply to the professor of naval science at the college or university, who will in turn

Drawing books for the new term.

forward his recommendations to the president of the college. Not more than three candidates may be nominated each year by each of the educational institutions in which an NROTC unit is in operation to compete among themselves for 10 vacancies to the Naval Academy.

Other Sources of Appointments

Those applying for nominations under the laws providing for the sons of deceased veterans and the sons of holders of the Medal of Honor should write to the Chief of Naval Personnel, Navy Department, Washington 25, D.C. Such applicants should give the full name, rank or rating, and organization of the deceased veteran or the holder of the Medal of Honor, the full name of the candidate for appointment as midshipman, his date of birth, and such other pertinent information as will assist in the positive identification of both the parent and the candidate. Residents of the District of Columbia should apply directly to the Commissioners of the District of Columbia for full details at least one year in advance of the year in which the candidate hopes to enter as a midshipman.

Application for appointment from the Canal Zone must be addressed to the Governor of the Canal Zone, and application for the appointment of a native of Puerto Rico must be addressed to the Governor of Puerto Rico.

Additional Appointments From Among Qualified Alternate Nominees and Competitive Candidates

The Secretary of the Navy is authorized to appoint additional midshipmen from qualified alternates and qualified competitive quota candidates in order to bring the Brigade of Midshipmen to authorized strength. When the number of additional admissions is determined, the Academic Board will review the records of all scholastically qualified candidates within each nomination source. Application by the individual is not necessary or desired since all qualified candidates are considered by the Academic Board. Selections will be made from those whose records are outstanding in scholarship, whose character and personality are established as decidedly superior in statements of recommendations from school and other officials, and in whose cases there is marked evidence of leadership potential as indicated by class offices held, participation in extracurricular and community activities, and other achievements of note. At least two-thirds of those so appointed must be from qualified alternates nominated from the noncompetitive sources.

The Naval Academy and Annapolis.

QUALIFYING ACADEMICALLY

There are two methods by which a candidate may qualify academically for admission to the Naval Academy:

1. College entrance examination.
2. College certificate.

Candidates holding noncompetitive congressional nominations and the sons of holders of the Medal of Honor are permitted to utilize either of the two methods, and in these instances it is the candidate's responsibility to determine which method offers him the greater possibility of success. All other candidates must take the College Entrance Examination Board tests when they are given in March of the year in which designated for appointment.

In the following brief description of the two methods, only the essential features are covered. Candidates, prospective candidates, and school officials are invited to correspond with the Admissions Officer, U.S. Naval Academy, Annapolis, Md., regarding any point in the admission requirements on which further information is desired.

All candidates for admission must have an accredited high school certificate. It is important that each candidate insure that his complete high school record and the record of any college work which he may have completed be furnished the Naval Academy.

College Entrance Examination Method

The basic method of qualifying is by taking the College Entrance Examination Board tests, as follows: The Scholastic Aptitude Test (verbal and mathematics section), the English Achievement Test, and either the Intermediate or the Advanced Mathematics Achievement Test. An unacceptable score on any test is cause for rejection.

All candidates for appointment from the various competitive sources and all other candidates not qualifying by the College Certificate Method must take this series of tests.

Each duly nominated candidate must register with the College Entrance Examination Board for the March series of tests as promptly as possible after receiving the necessary instructions from the Bureau of Naval Personnel, Navy Department, Washington, D.C. These instructions will provide for payment by the Navy of fees for tests.

Information on the tests, including dates of administration, location of testing centers, dates by which candidates must register, method of application, etc., is published in a booklet entitled *Bulletin of Information.* A copy may be obtained without charge by writing to the College Entrance Examination Board, Post Office Box 592, Princeton, N.J., or Post Office Box 27896, Los Angeles 27, Calif.

Satisfactory scores in the March administration of the College Entrance Examination Board Tests will be determined by the Academic

Board of the Naval Academy. No candidate will be admitted to the Naval Academy unless in the opinion of the Academic Board he shows the requisite mental qualifications.

A high school certificate is required for eligibility and school records will be a consideration in determining whether or not a candidate is to be accepted. A good secondary school record is one showing that a candidate has completed with good grades the full high school course in English, two years of algebra, one of plane geometry, one of United States history and not fewer than eight optional units from such subjects as chemistry, physics, biology, philosophy, astronomy, geography, mathematics, history, economics, government, foreign languages, public speaking, journalism, commercial law, and mechanical drawing.

College Certificate

This method of fulfilling the educational requirements for admission is available only to candidates holding noncompetitive congressional nominations and to sons of holders of the Medal of Honor.

To qualify by the college certificate method, a candidate must, in addition to satisfying the requirements in a secondary school certificate outlined above, also present a certificate from an accredited junior college, technological school of college grade, college, or university, attesting the completion of one year of college work with grades acceptable to the Naval Academy. The college certificate must include at least 6 semester hours of mathematics selected from college algebra, trigonometry, calculus, etc., six of college English and/or history, and

sufficient other subjects acceptable to the Naval Academy to establish a total of at least 24 semester hours of credit for the year's work. College credits which have been used to offset deficiencies in a high school certificate will not be counted toward meeting the requirements for an acceptable college certificate.

Any candidate who is at all uncertain as to his ability to qualify by the college certificate method is strongly advised to take the entrance examination. However, failure to score acceptably on the entrance examination will disqualify the candidate for entry in that year.

QUALIFYING PHYSICALLY

The Departments of the Army, Navy, and Air Force have made available to all candidates for the Naval Academy places where a thorough preliminary physical examination can be obtained at no expense to the candidate other than the expenses of subsistence and travel to and from the place of examination.

These preliminary physical examinations, which are conducted at naval hospitals, at Army and Air Force bases, and on hospital ships, will be given to any candidate presenting a letter of request or authorization from a Member of Congress, the Chief of Naval Personnel, or from a member of the Armed Forces desiring examination of his son or dependent relative. It is advisable to make an appointment in advance.

A prospective candidate need not have been formally nominated in order to undergo a preliminary physical examination. In fact, Members of Congress, before deciding upon their nominations, may require prospective nominees to undergo the examination. Prospective candidates may write to the Senator or Representative to whom application for nomination will be made, and request a letter asking that the examination be given at the nearest examination point. Early physical examination is advisable, since defects are frequently revealed which may be corrected if time permits. Formal physical examinations are conducted at specified naval hospitals, and other specified naval activities in various parts of the United States. Candidates are required to be physically fit, well-formed, and of sound constitution. The physical requirements are exacting. The best interests of the Government, the Navy, and the individual demand that they be so.

Detailed information concerning the physical requirements and the places at which both preliminary and formal examinations are given is contained in the pamphlet "Regulations Governing the Admission of Candidates into the United States Naval Academy as Midshipmen," which, as previously mentioned, may be obtained from the Chief of Naval Personnel in the Navy Department or from the Naval Academy.

General Information

PAY AND ALLOWANCES

Since a midshipman at the Naval Academy is actually a member of the naval service, subject to the orders of the Navy Department and its rules and regulations, he draws pay commensurate with his rank which lies between that of a warrant and a commissioned warrant officer. This pay is $111.15 per month, plus a ration allowance of $1.35 per day. The latter amount is used solely for and completely provides for his board. Under the direction of the Superintendent, his monthly pay is utilized to provide the following:

Prescribed uniforms and clothing.
Textbooks and equipment.
Sundries, for health, cleanliness and recreation.
Services, such as laundry, tailor, barber and cobbler.
Moderate allowance for extracurricular activities.
Payment of income and social security taxes.
Funds to purchase necessary uniforms upon graduation.

The midshipman is expected to live frugally and within the limits of his pay. His maintenance allowance is sufficient to meet all normal demands. Through wise use of his pay, he can have enough to meet his expenses during annual leave periods.

Medical, dental, and hospital services are furnished without cost, exactly as they are provided for all other personnel of the Navy on active duty.

ENTRANCE DEPOSITS

In order to defray part of the costs of his initial outfitting, each candidate admitted to the Naval Academy must deposit the sum of $300 with the U.S. Navy. In addition, the Government will advance the sum of $600 which will be an obligation against the midshipman's account until sufficient credit has accumulated from his salary to liquidate the debt. He may, however, repay the amount in full from his own funds at any time after entering.

Administration Building.

A Career as a Naval Officer

First Duty

Upon graduation and commissioning, an officer has taken the first step in his naval career. Through experience ashore and afloat and through advanced academic work, he will be continuously preparing himself to qualify for assignments of greater responsibility and professional attainment.

The first career opportunity comes in the choice of branch of the service, within limits set by the needs of the Navy and the qualifications of the individual. A Naval Academy graduate may be commissioned ensign in the line. Wearing above the stripe on his sleeve the star that indicates he is in the line of command, he may qualify for training as a naval aviator, or he may qualify for submarine training and leadership in the underwater Navy, or he may prefer to remain in the surface ships, with their varied missions in amphibious, antisubmarine, and striking forces.

Graduates so desiring will be ordered to flight training immediately after graduation leave, and selected numbers may elect submarine or nuclear power training immediately.

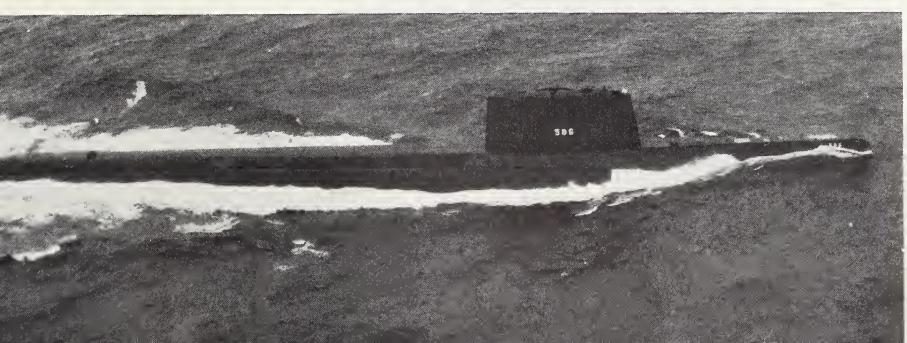
Other graduates of the Naval Academy may become ensigns in a staff corps. Wearing the special device of the Supply Corps or Civil Engineer Corps, they will receive further education and then be ordered to duties in their specialties. And still others, commissioned as second lieutenants in the Marine Corps, will receive basic training and then be assigned Marine Corps duty ashore or affoat.

Officer Education and Training

The Navy sponsors a wide variety of courses, conducted at naval and civilian institutions, designed to equip officers for their naval duties and to prepare them to assume higher responsibility in the service of the United States.

Navy functional and basic technical courses normally are the first postcommissioning training of officers. Mostly of short duration, they

First to circumnavigate the world under water,



are in such fields as communications, gunnery, antisubmarine warfare, damage control, test pilot training, electronics, and amphibious warfare.

After the first tour of operational duty with the fleet of 3 or 4 years, every qualified Naval Academy graduate may expect orders to graduate school for 1 year. Line officers will be ordered to school in one of the fields of mathematics, physics, management, or international relations. Staff Corps officers may request graduate education appropriate to their specialties. After the first year and the opportunity to qualify for a master's degree, about half of the officers may expect to continue for a second or third year. They may select studies such as nuclear, marine, or aeronautical engineering, advanced science, middle management, and naval intelligence. For the best qualified, the way is open to qualify for a doctor's degree. Courses are conducted at the U.S. Naval Postgraduate School, Monterey, Calif., the Naval Intelligence School, Washington, D.C., and civilian institutions such as Renssalaer Polytechnic Institute, Stanford, Princeton, Carnegie Tech, and M.I.T.

Office Career Patterns

After about the first 5 years of active duty, individual officer careers continue along many paths, depending upon individual experience and background. A line officer may return to sea as a head of department in a destroyer or commanding officer of a smaller combatant vessel. Line officers who are aviators may expect to resume duty in an aircraft squadron based in a carrier or ashore. Others qualified in submarines will continue in duties preparing them for submarine command, which comes after about 14 years of commissioned service.

Every officer may expect to serve in billets in which his naval education will be most valuable. In addition, line officers aspiring to command of ships of the Fleet and aircraft units will serve in a variety of ships or aircraft in different capacities, as well as in staff and planning billets afloat and ashore, to further prepare them for command. Officers wishing to concentrate in fields such as engineering or naval intelligence may so request, and serve subsequent tours of duty more restricted to their special qualifications. They are apart from officers of the Staff Corps, who had previously determined to channel their careers in specialized fields.

The great majority of Naval Academy graduates remain eligible for Fleet command. After about 15 years of service, in the rank of lieutenant commander or commander, and again in the rank of captain, many will enter one of the Service war colleges for courses in strategy, logistics, and staff planning. Throughout the rest of their careers as commanders, captains, or in flag rank, at sea and in supporting naval installations ashore, naval officers fill positions of grave responsibility and leadership in the service of the Navy and the United States.

Important Dates for Candidates

1960

July 1	The Navy Department begins officially accepting the names of candidates nominated for admission in the following year.
	In this month, the U.S. Civil Service Commission holds the first of several special competitive tests for Members of Congress who utilize this means of selecting their candidates.

1961

January 1	Closing date for the receipt of nominations of foreign candidates.
February 1	Closing date for the receipt of nominations of candidates.
February 18	Closing date for candidates to register for March College Board tests.
March 18	Date of required College Board tests in 1961.
March 20	Commencement of formal physical examinations at examining points throughout the United States.
May 11 (approx.)	Bureau of Naval Personnel will notify candidates of results of College Board tests.
May 15 (approx.)	Date physical reexaminations will commence at Naval Academy for candidates authorized to report for same.
July 5	Date on which qualified candidates will be authorized to report at Naval Academy for appointment as midshipmen.

Academic Calendar 1960–1961

First Term

26–28 August	Parents' Open House, Class of 1964.
Monday, 29 August	First term recitations begin, Fourth Class.
Tuesday, 6 September	Leave and summer training ends, First, Second, and Third Classes.
Thursday, 8 September	First term recitations begin, First, Second, and Third Classes.
5–9 December	Board of Visitors.
Tuesday, 20 December	Christmas leave begins.
Tuesday, 3 January	Christmas leave ends.
Saturday, 21 January	Examinations start.
Friday, 27 January	Examinations end.
Friday, 27 January	End of term leave begins.
Sunday, 29 January	End of term leave ends.

Second Term

Monday, 30 January	Second term begins.
Thursday, 23 March	Spring leave begins.
Sunday, 26 March	Spring leave ends.
Wednesday, 24 May	Examinations begin.
Wednesday, 31 May	Examinations end.
Friday, 2 June	June Week begins.
Wednesday, 7 June	Graduation.

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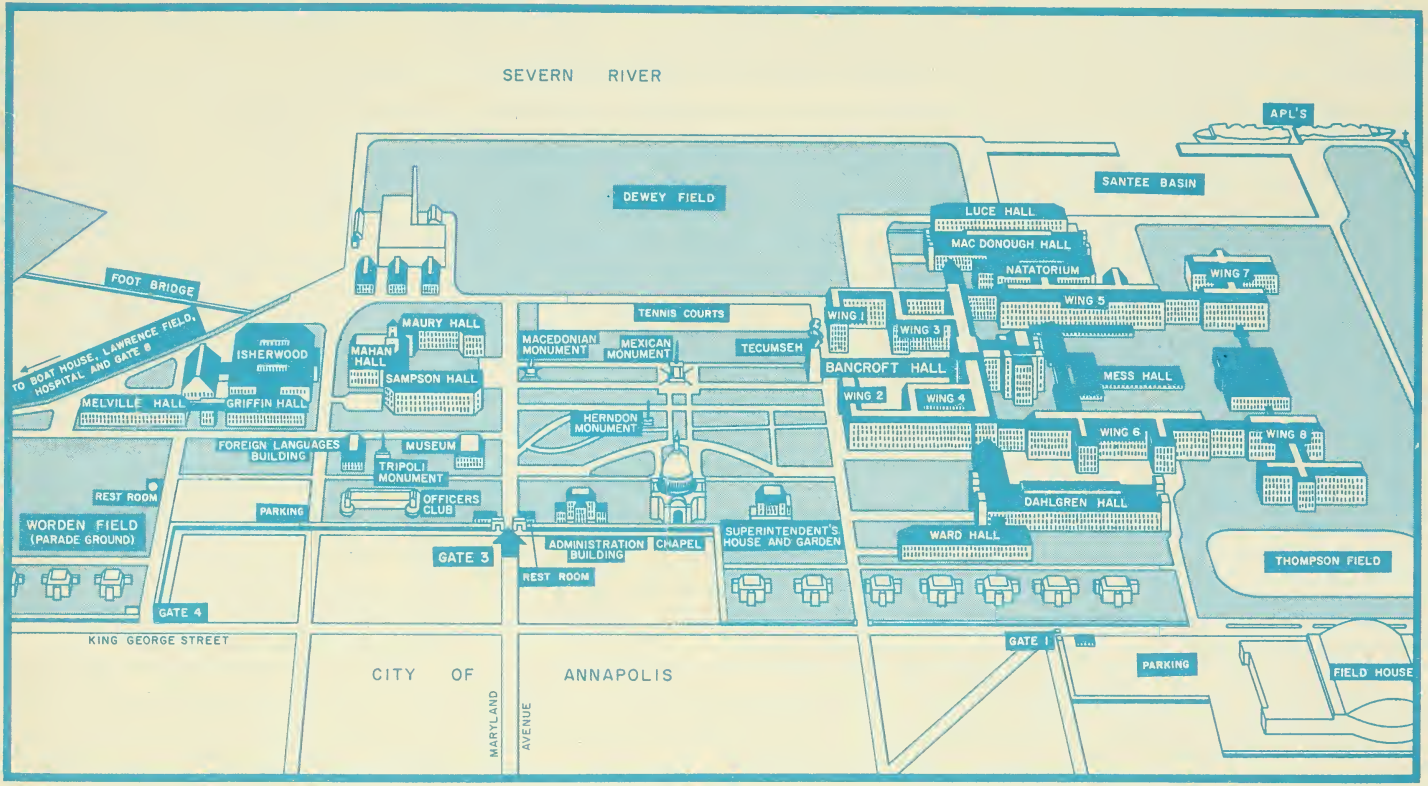
The United States Naval Academy



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